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This study concerned the development and testing of an instrument designed to provide nursing schools with meaningful information about the personalities and potential problems of their students. In Phase I, the instrument--the Luther Hospital Sentence Completions (LHSC)--was constructed along with a Nursing Education Scale (NES) which provided for scoring of LHSC responses. Cross validation of the LHSC in two schools of nursing revealed significant differences between achievers and failures but not between achievers and underachievers. Phase II was largely a replication of Phase I but three schools of nursing were used. In two schools, significant relationships were noted between achievement and NES-LHSC Total as well as five attitudinal areas. In a third school, achievement was related significantly to NES-LHSC Total and one attitudinal area. In both phases, other instruments (the Minnesota Multiphasic Inventory, the ROTTER Incomplete Sentence Blank, and the National League for Nursing Pre-Nursing and Guidance Test) were studied. The report also includes information about two other instruments developed in the project: the Nurse Attitudes Inventory and the faculty Empathy Inventory. Phase III is available as VT 007 896. (JK)

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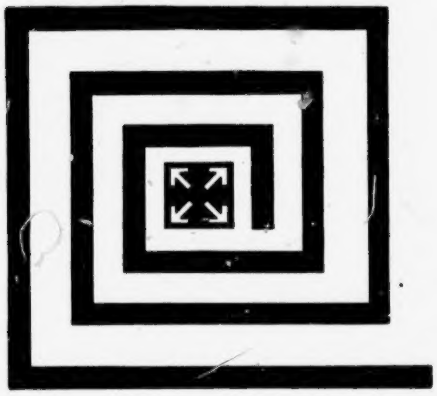

# THE PREDICTION OF SUCCESS IN NURSING EDUCATION

## Comprehensive Report: Phase I and Phase II

## 1959 - 1967

## Manual for LHSC and NSC

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VT009168

# THE PREDICTION OF SUCCESS IN NURSING EDUCATION:

## PHASE I AND PHASE II

1959-1967

A Manual for the Luther Hospital Sentence Completions
and the Nursing Sentence Completions

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John R. Thurston
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# CONTENTS

| | | Page |
|---|---|---|
| | Acknowledgement | iii |
| | List of Tables | vii |
| | List of Figures | xvi |
| CHAPTER | | |
| 1 | Nursing Student Attrition | 1 |
| 2 | An Overview of the Research Design: Phases I and II | 15 |
| 3 | The Minnesota Multiphasic Personality Inventory | 27 |
| 4 | The Rotter Incomplete Sentence Blank (ISB) | 71 |
| 5 | The Luther Hospital Sentence Completions (LHSC) | 83 |
| 6 | Nursing Sentence Completions (NSC) | 129 |
| 7 | Nurse Attitudes Inventory (NAI), Forms I and II | 137 |
| 8 | Nursing Education Scale (NES) | 149 |
| 9 | Relationships Among Performance on LHSC, NSC, and NAI as Scored with the NES | 155 |
| 10 | Discriminant Function and the Prediction of Nursing Student Achievement | 163 |
| 11 | Empathy Inventory (EI) | 173 |
| 12 | Summary of Phase I and II | 185 |
| | APPENDIX | |
| | Appendix A | A-1 |
| | Appendix B | B-1 |
| | Appendix C | C-1 |

## List of Tables

| Table | | Page |
|---|---|---|
| 3. 1 | Mean Pre-Admission MMPI L Scale Scores By Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students | 31 |
| 3. 2 | Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Lie Scale | 32 |
| 3. 3 | Analysis of Variance for Pre-Admission MMPI Lie Scale Scores | 33 |
| 3. 4 | Mean Pre-Admission MMPI F Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students | 34 |
| 3. 5 | Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI F Scale | 35 |
| 3. 6 | Analysis of Variance for Pre-Admission MMPI F Scale Scores | 36 |
| 3. 7 | Mean Pre-Admission MMPI K Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students | 37 |
| 3. 8 | Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI K Scale | 38 |
| 3. 9 | Analysis of Variance for Pre-Admission MMPI K Scale Scores | 39 |
| 3. 10 | Mean Pre-Admission MMPI Hypochondriasis Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students | 40 |
| 3. 11 | Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Hypochondriasis Scale | 41 |
| 3. 12 | Analysis of Variance for Pre-Admission MMPI Hypochondriasis Scale Scores | 42 |

Table Page

3.13 Mean Pre-Admission MMPI Depression Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 43

3.14 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Depression Scale 44

3.15 Analysis of Variance for Pre-Admission MMPI Depression Scale Scores 45

3.16 Mean Pre-Admission MMPI Hysteria Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 46

3.17 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Hysteria Scale 47

3.18 Analysis of Variance for Pre-Admission MMPI Hysteria Scale Scores 48

3.19 Mean Pre-Admission MMPI Psychopathic Deviate Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 49

3.20 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Psychopathic Deviate Scale 50

3.21 Analysis of Variance for Pre-Admission MMPI Psychopathic Deviate Scale Scores 51

3.22 Mean Pre-Admission MMPI Masculinity-Femininity Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 52

3.23 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Masculinity-Femininity Scale 53

3.24 Analysis of Variance for Pre-Admission MMPI Masculinity-Femininity Scale Scores 54

Table Page

3.25 Mean Pre-Admission MMPI Paranoia Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 55

3.26 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Paranoia Scale 56

3.27 Analysis of Variance for Pre-Admission MMPI Paranoia Scale Scores 57

3.28 Mean Pre-Admission MMPI Psychasthenia Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 58

3.29 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Psychasthenia Scale 59

3.30 Analysis of Variance for Pre-Admission MMPI Psychasthenia Scale Scores 60

3.31 Mean Pre-Admission MMPI Schizophrenia Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 61

3.32 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Schizophrenia Scale 62

3.33 Analysis of Variance for Pre-Admission MMPI Schizophrenia Scale Scores 63

3.34 Mean Pre-Admission MMPI Hypomania Scale Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 64

3.35 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Hypomania Scale 65

3.36 Analysis of Variance for Pre-Admission MMPI Hypomania Scale Scores 66

Table Page

3.37 Mean Pre-Admission MMPI Social Introversion-Extraversion Scale Scores by Achievement Status and Nursing Affiliation for 445 Second Year Nursing Students 67

3.38 Differences Between Means for Achievement Groups and Nursing Schools on the Pre-Admission MMPI Social Introversion-Extraversion Scale 68

3.39 Analysis of Variance for Pre-Admission MMPI Social Introversion-Extraversion Scale Scores 69

4.1 Mean Pre-Admission Rotter ISB Scores by Achievement Status and Nursing School Affiliation for 445 Second Year Nursing Students 79

4.2 Differences Between Means for Achievement Groups and Nursing Schools on Pre-Admission Rotter ISB 80

4.3 Analysis of Variance for Pre-Admission Rotter ISB Scores 81

5.1 Inter-Scorer Correlations of NES Total Scores from Seven Scorings of 50 LHSC'S 104

5.2 Analysis of Variance and Reliability Estimate for NES-Total Scores of 7 Scorers of 50 LHSC'S 104

5.3 Test-Retest Correlations of NES-LHSC Total and Area Scores (N=104) 105

5.4 Mean Nursing NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 106

5.5 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission NES-LHSC-Area Scores 107

5.6 Analysis of Variance for Pre-Admission Nursing NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 108

5.7 Analysis of Variance for Pre-Admission Nursing NES-LHSC-Area Scores at Madison General Hospital School of Nursing 108

Table | Page

5.8 Mean Self NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 109

5.9 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Self NES-LHSC-Area Scores 110

5.10 Analysis of Variance for Pre-Admission Self NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 111

5.11 Analysis of Variance for Pre-Admission Self NES-LHSC-Area Scores at Madison General Hospital School of Nursing 111

5.12 Mean Home-Family NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 112

5.13 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Home-Family NES-LHSC-Area Scores 113

5.14 Analysis of Variance for Pre-Admission Home-Family NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 114

5.15 Analysis of Variance for Pre-Admission Home-Family NES-LHSC-Area Scores at Madison General Hospital School of Nursing 114

5.16 Mean Responsibility NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 115

5.17 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Responsibility NES-LHSC-Area Scores 116

5.18 Analysis of Variance for Pre-Admission Responsibility NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 117

Table Page

5.19 Analysis of Variance for Pre-Admission Responsibility NES-LHSC-Area Scores at Madison General Hospital School of Nursing 117

5.20 Mean Other-Love-Marriage NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 118

5.21 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Other-Love-Marriage NES-LHSC-Area Scores 119

5.22 Analysis of Variance for Pre-Admission Other-Love-Marriage NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 120

5.23 Analysis of Variance for Pre-Admission Other-Love-Marriage NES-LHSC-Area Scores at Madison General Hospital School of Nursing 120

5.24 Mean Academic NES-LHSC-Area Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 121

5.25 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Academic NES-LHSC-Area Scores 122

5.26 Analysis of Variance for Pre-Admission Academic NES-LHSC-Area Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 123

5.27 Analysis of Variance for Pre-Admission Academic NES-LHSC-Area Scores at Madison General Hospital School of Nursing 123

5.28 Mean Total NES-LHSC Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 124

5.29 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Total NES-LHSC Scores 125

Table Page

5.30 Analysis of Variance for Pre-Admission Total NES-LHSC Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 126

5.31 Analysis of Variance for Pre-Admission Total NES-LHSC Scores at Madison General Hospital School of Nursing 126

5.32 Pre-Admission NES-LHSC Total Scores by Achievement Status at Three Schools of Nursing for 445 Second Year Students 127

6.1 Inter-Scorer Correlations of NES-NSC Total Scores from Six Scorings of 36 NSC'S 134

6.2 Analysis of Variance and Reliability Estimate for NES-NSC Total Scores of Six Scorings of 36 NSC'S 134

6.3 Test-Retest Correlations of NES-NSC Total and Area Scores (N=56) 135

7.1 Test-Retest Correlations of NES-NAI Total and Area Scores (N=63) 147

8.1 Correlations of NES Item Scores with Area and Total Scores on the Basis of 223 NSC's Administered at Six Schools of Nursing 154

9.1 Correlations of Total and Area Scores of NES-LHSC and NES-NSC Scorings (N=99) 158

9.2 Correlations of Total and Area Scores of NES-LHSC and NES-NSC Scorings (N=33) 159

9.3 Correlations of Total and Area Scores of NES-NAI and NES-LHSC Scorings (N=33) 160

9.4 Correlations of Total and Area Scores of NES-NSC and NES-NAI Scorings (N=162) 161

10.1 Actual Achievement Compared to Achievement Identified by Discriminant Function for 110 Students at Luther Hospital School of Nursing 168

Table Page

10.2 Accuracy of Identification Using Past Experience or Discriminant Function Analysis at Luther Hospital School of Nursing 168

10.3 Actual Achievement Compared to Achievement Identified by Discriminant Function for 88 Students at Holy Family Hospital School of Nursing 169

10.4 Accuracy of Identification Using Past Experience or Discriminant Function Analysis at Holy Family Hospital School of Nursing 169

10.5 Actual Achievement Compared to Achievement Identified by Discriminant Function for 247 Students at Madison General Hospital School of Nursing 170

10.6 Accuracy of Identification Using Past Experience or Discriminant Function Analysis at Madison General Hospital School of Nursing 170

10.7 Actual Achievement Compared to Achievement Identified by Discriminant Function for Three Schools of Nursing Combined 171

10.8 Accuracy of Identification Using Past Experience or Discriminant Function Analysis for Three Schools of Nursing Combined 171

11.1 Empathy Inventory (EI) Scores and Percentiles for Different Groups 184

12.1 Mean Total NES-LHSC Scores by Achievement Status for 445 Second Year Nursing Students at Three Schools of Nursing 193

12.2 Differences Between Means for Achievement Groups and Schools of Nursing on Pre-Admission Total NES-LHSC Scores 194

12.3 Analysis of Variance for Pre-Admission Total NES-LHSC Scores at Luther Hospital and Holy Family Hospital Schools of Nursing 195

Table Page

12.4 Analysis of Variance for Pre-Admission Total NES-LHSC Scores at Madison General Hospital School of Nursing 196

## List of Figures

| Figure | | Page |
|---|---|---|
| 11.1 | Predispositions and Precipitations Involved in Success or Failure of Student Nurses | 174 |

## Errata

page 98 line 37 should read:

> "between Achievers vs. Underachievers, and Achievers vs. Failures. There"

page 100 lines 24 and 25 should read:

> "scores were noted in comparing the achievers with underachievers as well as with failures. In considering the attitude areas, only Home-Family"

page 188 lines 19 and 20 should read:

> "Total scores between achievers and failures and between achievers and underachievers"

# Chapter 1

## Nursing Student Attrition*

### Introduction

The 1963 Surgeon General's report, Toward Quality in Nursing: Needs and Goals, outlined the immensity of the current and developing demands upon the nursing profession. The recommendations and projections included within it furnish the basis and rationale for organized attempts to meet these needs, as well as the criteria by which the success of such efforts may be judged. The report is an important contribution which will have an impact on the profession for years to come.

However, one significant area was given little emphasis in this report. Only one short paragraph (p. 12) and a footnote (p. 20) were devoted to the problem of failure and withdrawal among nursing students. It was noted that about one-third of students who enter nursing schools do not graduate and that this rate had held for many years. Furthermore, the report stated that there had been no comprehensive studies of the problem since 1947. When one considers the progressive tenor of the rest of the report, the brevity of this commentary is difficult to understand. It seemed to reflect the pessimistic position that nursing student attrition was inescapable -- that the "fallout" rate of approximately one-third is to be expected by nursing schools as inevitably as "death and taxes".

The published psychological studies of this problem may support this essentially dour point of view (Taylor, 1963). However, it seems that the problem of student withdrawal must be stressed, for the success with which it can be handled will have a direct and important influence on whether the goals of the Surgeon General's report can be realized. Accordingly, it appears worthwhile to devote some discussion to the factors associated with failure or success in nursing education as they relate to the recommendations of this report, with special reference to those factors involving recruitment of nursing students.

### Need for Greater Recruitment

Intensive and extensive recruitment is advocated by the Surgeon General's report as one answer to the need for more and better nurses. To state it simply, in order to graduate more, it is helpful to enroll more. If enough applicants are recruited, it is possible that the required number of graduate nurses might be available in spite of a student withdrawal rate of approximately one-third. The money spent on academic failures and dropouts may have to be viewed as a necessary cost of nursing education.

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*Substantial elements of this chapter were reported in an article: Brunclik, H. L. and Thurston, J. R., "Nursing Student Attrition", Nursing Outlook, 1965, 13, 57-59.

A very heavy burden of likely failures would have to be carried by the schools in order to insure that a substantial number will graduate. Indeed, this may be necessary, since the need for nurses is enormous. The Surgeon General's report states that a total of 100,000 graduates of basic professional schools would be needed annually, beginning in 1966, to meet hospital staff needs. However, only about 50,000 students are admitted annually to these schools. Of these, approximately 35,000 are graduated. In keeping with these facts, the Surgeon General's report indicates that a goal of 53,000 graduates annually is possible, with 1969 as a more reasonable date for its realization.

Several basic questions may be raised about recruiting in terms of a goal of even this magnitude. First of all, who is going to supply the considerable effort needed for recruitment? In following the recommendations, nursing school faculties might be forced to give an undue amount of time to recruiting activity -- time they should be devoting to the instruction and counseling of their students. Perhaps an increasing share of the responsibility for recruiting should be shifted to the nurses in the community. If properly prepared, oriented, and guided, such community nurse recruiters could constitute reliable, efficient, and persuasive sources of information regarding nursing as a career. The responsibilities and duties of recruiting may be so great as to require the services of full-time, specialized recruiters who would go from community to community doing whatever would be necessary to interest capable students in nursing as a career.

Second, and perhaps more important, will increased recruiting activities produce students who will become the high caliber professional nurses advocated in the Surgeon General's report? It seems likely that there are highly capable young men and women who are not now interested in nursing, but who might develop an interest if they were properly approached. There is some suggestion that nursing schools are getting a decreasing share of the students graduating from high school. Thus, it would appear that high school counseling must be markedly strengthened. Klemer (1964) makes recommendations for updating and improving the high school counselor's knowledge of nursing. If these counselors are better able to depict the role of nurses, with an accurate statement of advantages and rewards, then some talented students, who might not otherwise do so, may go into nursing.

Lastly, how many students must be recruited and admitted to produce the proposed number of graduate nurses? If three students must now be admitted to allow graduation of two nurses, how many would have to be admitted to gain the approximate doubling of output to four nurses by 1969? If the recruiting is extremely effective, and the most intelligent, best prepared students are convinced of the desirability of nursing as a career, it might be possible to maintain, or even improve, the ratio of admitting six students to obtain four graduate nurses.

To get increased numbers of students, however, the recruiters in this highly competitive situation will probably have to tap sources of students who are generally less capable, less interested, or less well informed than the students currently admitted to nursing schools. If this becomes the case, it might be necessary to admit seven, eight, or even nine students in order to obtain the desired four graduates.

## Importance of Failure-Withdrawal

Other emerging trends conspire to increase the failure-withdrawal rate. The Surgeon General's report indicates that the intellectual and motivational demands on nursing students will continue to grow. There is reason to believe that the profession will require the baccalaureate degree, and perhaps the masters degree, for the professional nurse of the very near future. The lengthening of the educational period and the increasing difficulty of nursing school curriculums should tend to increase the proportion of students failing or withdrawing, even if their capability and motivational levels remain constant.

Although it becomes complicated, it is necessary to consider the interaction of the combined effects of many forces on the student attrition rate, for example, the increasingly greater demands placed on students who may in general be less capable of succeeding. The question concerning the ratio of admissions to graduates should be asked again. If three students must now be admitted to allow graduation of two nurses, how many might have to be admitted to gain the approximate doubling of output to four nurses by 1969? With increasing demands in the face of decreasing student capability, this figure might rise to ten or more. Such a student attrition rate -- in excess of 60 per cent -- is frightening to contemplate in terms of the financial expense to the schools, the demoralizing effect on the faculties, and the psychological trauma to the many students involved.

In view of these gloomy possibilities, the nursing profession should explore exhaustively every conceivable source of capable students for its programs. As the Surgeon General's report suggests, married students, older students, men students, and students from minority groups would constitute important target populations for recruitment.

One highly important and available resource for graduate nurses was overlooked in the report. These are the students who withdraw from or fail in schools of nursing. There are many factors to argue in favor of increased attention to this group.

First of all, there are a great many students in this category. Second, these students have sufficient intellectual-educational credentials to allow them to pass the current admission standards of schools of nursing. Third, their motivation is sufficient to cause them to enroll in a school of nursing. And fourth, there is evidence that many who withdraw or fail do so for reasons that are only dimly understood at present, but which have little to do with a simple lack of ability or motivation. In short, as a group they have many positive characteristics that might not be found as frequently or as readily in the additional students enrolled through an expanded recruitment program. Students with these positive characteristics, but also with a potential for failure or withdrawal, should receive prime consideration in any effort aimed at increasing the number of graduate nurses.

## Alleviation of Student Attrition

In considering student failures and withdrawals, it would seem that attention and research should be focused on those associated factors which are most amenable to constructive change.

In the area of student selection and education, there is evidence that specific units of instruction, or courses, require quite specific aptitudes and prior learnings if a student is to succeed in mastering their content. Greatly improved diagnostic testing involving these prerequisites is called for in order to provide a basis for offering preventive or remedial instruction to those students most likely to experience difficulty. Such instruction should begin before the students have begun to demonstrate their incapacities by failure in coursework and on the hospital wards. Faculty counselors, alerted to such students on the basis of test findings, would be in a position to recommend or provide special assistance at an early, optimal time. A nursing school must provide training and time for the counseling function in recognition of the fact that counseling constitutes an important responsibility of its faculty members.

In relation to the intellectual-educational factors which are related to student success in nursing education, there should be a studied attempt to define more precisely the professional skills and attributes required of a nurse. These considerations could then be used as the basis for reconsideration of the objectives and content of nursing education programs. At present, the goals of instruction and experience often seem rather vaguely defined and not too well related to the eventual, diverse demands placed upon the professional nurse. Some progress in this direction has already been reported in establishing an effective means of evaluating the clinical performance of students (Hazeltine and Zeitz, 1964).

Motivation toward nursing, personality, and social factors should also require increased attention. If nursing education is required as multi-faceted learning experience, then nursing schools should properly be concerned with these factors as they relate to the student's ultimate functioning as a professional person. Increased attention should be devoted to psychological training and the development of tests designed to enhance faculty members' understanding of student personality and adjustment difficulties.

Looking at the various circumstances within schools which might precipitate failure or withdrawal, the recommendations for change become more difficult. Two of these, the academic and clinical demands, seem destined for continuing increases which will almost inevitably lead to increased student attrition. No constructive purpose could be served by suggesting that these demands be reduced. In terms of two other factors operating within the school -- the impact of individual faculty members and the psycho-social climate of the school -- it is recommended that in-service programs for nursing school faculties might explore the problems in these areas which affect student performance (Thurston, Brunclik and Finn, 1962). One objective to these meetings would be to help the individual faculty member develop further in her capacity to help students, in and outside the classroom or ward, accomplish the fundamental learnings which are required for success in nursing. Research into the complicated factors involving faculty and school is clearly needed. Fox and others (1964) have identified characteristics of individual faculty members which were related to nursing student satisfaction and stress.

There will be some who will be more impressed by the cost and the difficulties of implementing such recommendations involving nursing education than by the rationale underlying the need for them. The suggested changes and research would entail considerable expense. However, in view of the great need for more and better qualified nurses and the very real obstacles to meeting these needs, can the profession of nursing, or the nation as a whole, really afford not to make these additional efforts?

## Psycho-educational Studies of Withdrawal and Underachievement

Intelligence and achievement tests have come in for a considerable share of attention as researchers seek to determine the intellectual correlates of success in nursing education. Gilman (1923) and Young (1924) were among the first to explore the relationship of intelligence to successful performance in nursing schools. Since that time a variety of special tests dealing with aptitude and achievement have been developed. For example, both the NLN and the Psychological Corporation have constructed test batteries specifically for the selection of nursing students. These tests have demonstrated acceptable reliability and validity for certain purposes, but their predictive efficiency varies from school to school and even on a yearly basis within the same school. Taylor (1963) in his summary of research in this area, indicates that high school and college grade point averages and test battery scores appear to be the best current predictors of academic success in nursing education.

The initial studies in motivation, interest and personality appeared first in the 1920's and others have appeared on an irregular basis ever since. Elwood (1927) is often cited as a pioneer in this field. As an early investigator, he was handicapped markedly by the primitive nature of personality tests available to him. In view of this, it is perhaps not surprising that he reported rather inconclusive findings. The continuing development of personality theory and evaluative techniques provided later investigators with psychological tests which afforded effective predictions in areas other than nursing education. Even with these improvements, however, the evidence supporting the use of personality and interest tests or questionnaires in the field of nursing education is anything but convincing.

Many of these studies have used traditional paper and pencil psychological inventories as measures of personality. The persistence of these efforts (See Reference List) has not been matched by the significance of their findings. The concerned investigator would be anything but impressed with the usefulness of these instruments in differentiating or predicting achievement level and "fall-out" of students enrolled in schools of nursing. After a comprehensive review of these studies, it is easy to agree with the statement by Gordon and Bennett (1944): "Tested against a rating scale of the degree to which personality of an individual contributed to success in training, the personality tests used demonstrated an almost negligible power of prediction."

Realizing the importance of the problem in terms of the Nation's needs for nurses, one is struck by the nature of reported studies. The work has consisted of a few individually adequate but rather isolated research efforts. The systematic approach to the problem that should be characteristic of effective research seems lacking. There is little in the form of prior studies serving as a firm foundation for the studies that follow. The relationship of successive studies is indirect and often unclear.

Authorities in the field have recommended research using projective techniques. Farrell (1954) stated that, "Research is needed also to develop projective techniques which may be useful in screening potential students who may be unsuited to the stresses of nursing; these same techniques might also be valid methods to use in counseling both undergraduate and graduate nurses." Mindess (1957) found that the Wechsler-Bellevue Intelligence Scale and the Rorschach in the hands of a competent clinical psychologist gave results that were significantly related to achievement in nurses' education. While this study indicated that projective tests may prove valuable in making predictions, this approach is not without obstacles. Projective tests are often difficult to score, the results tend to be somewhat unrealiable, administration is time-consuming, and interpretation by highly-skilled clinical psychologists is required. Accordingly, even if the effectiveness of the customary projective techniques were demonstrated, only a few schools of nursing would have the personnel to use these tests on a routine basis.

## A Research Study: The Prediction of Success in Nursing Education

There is a need for techniques that would provide nursing schools with meaningful information about the personality and potential problems of their students. The sentence completion form, a semi-projective device, would seem to be such an instrument. Sentence completion form as a term refers to a type of test in which the person is requested to respond, in a meaningful manner, to incomplete sentences presented as stimuli. One advantage of this form over the questionnaire lies in the fact that these sentence stems do not make apparent to the applicants just what is expected of them so faking is reduced. They give more unique and personal responses which may be useful in predicting behavior. The attitudes and emotional reactions expressed to these forms have been found to indicate important personality characteristics of the person tested (Goldberg, 1965). This technique has proven adaptable to a variety of situations and has produced highly reliable scorings that have demonstrated predictive validity particularly with students of an age group similar to that of nurses (Rotter and Rafferty, 1950).

The purpose of the Luther Hospital Research Project is to develop new techniques that will contribute specifically to accuracy of predictions of success in schools of nursing, and to an understanding of factors associated with nursing student performance. The first segment of this research was detailed in "The Prediction of Success in Nursing Education, Phase I, 1959 - 1964" (Thurston and Brunclik, 1965) (See Chapter 2). This report represents an attempt to provide a comprehensive summary of research findings developed in Phases I and II.

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# Chapter 2

## An Overview Of The Research Design: Phases I and II

### Phase I

### Research Design and Findings*

A basic goal of Phase I was the construction of a sentence completion form, the Luther Hospital Sentence Completions (LHSC), for the specific purpose of evaluating attitudes and emotional reactions believed by experienced nurses and authorities in the field to be vital to good nursing. The development of this 90-item form has been summarized elsewhere (See Chapter 5).

To tie this research effort more closely to the body of established psychological knowledge, both the Rotter Incomplete Sentence Blank (ISB) and the Minnesota Multiphasic Personality Inventory (MMPI) were used to round out the pre-admission psychological test battery. Performance on the NLN Pre-Nursing and Guidance (PNG) Examination as well as the student's rank in the high school graduating class were recorded. To determine whether the schools of nursing themselves might be contributing factors to the drop-out problem, differences between the schools on these measures were singled out for special study. The Phase I report is based on the results deriving from the first five years of this continuing, longitudinal research.

Specific aims of Phase I of the study were:

1) to construct a sentence completion form, entitled the Luther Hospital Sentence Completions (LHSC), designed specifically for nursing students and applicants to schools of nursing;

2) to develop and cross-validate the LHSC as scored by the Nursing Education Scale (NES) in terms of identifying prior to admission

- (a) those students who will graduate after working up to their full level of capability (Achievers)
- (b) those students who will fail to profit fully from their course of instruction even though they will probably graduate (Underachievers)
- (c) those students who will fail or withdraw from the nursing school program (Failure);

3) to determine whether or not the MMPI could identify prior to admission those applicants who would ultimately be designated Achievers, Underachievers, or Failures;

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*The Phase I report (Thurston, J. R. and Brunclik, H. L., The Prediction of Success in Nursing Education, Phase I, 1959-64, Luther Hospital, Eau Claire, Wisconsin, January, 1965) has been summarized in Thurston, J. R. and Brunclik, H. L., "The Relationship of Personality to Achievement in Nursing Education", Nursing Research, 1965, 14, 203-209.

4) to determine whether or not the pre-admission Rotter ISB could identify the applicants who would later be designated as Achievers, Underachievers, or Failures;

5) to explore differences among achievement groups and between schools in terms of rank in graduating high school class and performance on the NLN Pre-Nursing and Guidance Examination;

6) to construct a sentence completion form, the Nursing Sentence Completions (NSC), composed of the sentence stems which had elicited responses associated differentially with nursing student achievement.

## Method

Two schools of nursing were the major participants in Phase I: Luther Hospital School of Nursing (Luther), Eau Claire, Wisconsin and Holy Family School of Nursing (Holy Family), Manitowoc, Wisconsin. Annual testing of students began in early 1959.

Personality Measures - Every applicant submitting a formal application to either of these schools was evaluated by means of a mailed test packet, which included three test envelopes, a direction sheet, and a large envelope for return mailing. The first test envelope contained the LHSC, the second the Rotter ISB, and the third the MMPI. The direction sheet instructed students to do the LHSC first, the Rotter ISB second, and then the MMPI. When all three tests were finished, the applicant was instructed to place the three envelopes containing completed tests in the large envelope and return it to the school to which she had applied.

Educational-Intellectual Measures - The composite score of the Pre-Nursing and Guidance Examination (PNG) and the percentile rank of the applicant in her high school graduating class were included in her record.

Faculty Committees - The participating schools were responsible for the selection of faculty committees to evaluate each student. Each committee was composed of five faculty members who had been associated with a specific student, and who had direct personal knowledge of her performance for at least three months. Committee membership varies from student to student. These committees evaluated the students from two standpoints: personality-performance and achievement.

Personality-Performance and Achievement Ratings - After the students had been in school for approximately 18 months, each faculty committee member, operating independently, placed every student assigned to her in one of four quartiles (first quartile for the lowest, fourth quartile for the highest) for each of nine personality-performance traits: dependability, tolerance, effective intelligence, social awareness, adaptability, cooperativeness, objectivity, ability to teach, and interpersonal relationships. Special forms, complete with trait definitions, were supplied to facilitate these ratings, with the student's class as currently enrolled used as the basis for these judgments. The student's score for each of these traits was the mean of the five separate ratings supplied by the five faculty members of her committee.

The achievement ratings (Achiever or Underachiever) of the students were established by the faculty committee shortly after its members had completed the personality-performance ratings. Failures were designated by a review of school records. Rejects were those applicants who were never admitted. Achievement status was defined as follows:

a. Failures: those students who were admitted, but who had either failed or withdrawn.

b. Underachievers: those students who were admitted and who would probably graduate, but who did not measure up to their potentialities in the opinion of the faculty committee.

c. Achievers: those students who were admitted and who would probably graduate -- and who did measure up to their potentialities in the opinion of the faculty committee.

Nursing Education Scale (NES) Development - In 1961, after the faculty committee evaluation of the 1959 applicants, the pre-admission LHSC's were separated in terms of three schievement groups: Achievers (N=36), Underachievers (N=21), and Failures (N=21). Lists of responses from all members of these groups were then compiled for each of the 90 sentences that constitute the LHSC. These lists were then studied, one sentence stem at a time, in an attempt to identify the kinds of responses which might uniquely characterize these different achievement groups.

The method of selection and derivation of response categories was basically impressionistic and intuitive. It was difficult to establish clear-cut, meaningful statistical criteria for these selections. As a very rough "rule of thumb", at least a 20 per cent difference had to be noted between the response type of one achievement group as compared to another before a tentative response category was established as a potential differentiator.

It was found that there were many apparent differences in response types between the Achiever and the Failure groups. The Underachiever group did not seem to contribute a particularly characteristic form of response. Occasionally, the responses of the Underachievers would more nearly resemble those of the Failure group, but far more often, they would assume a form similar to that of the Achievers. Accordingly, the basic emphasis was placed on the responses differentiating Failures from Achievers.

If a category contained responses which tended to be characteristic of the Failure group, this was usually accorded a score of "3". If the differentiation appeared marked, then the response category was given a "4". Responses typically given by the Achiever group were allotted a score of "1". Scores of "0" were given those categories whose completions were given preponderantly by the Achiever group. Responses which did not seem to differentiate the achievement groupings were given a score of "2".

NES Preliminary Cross-validation - The pre-admission LHSC's of students applying in 1960 and 1961 and evaluated by the faculty committees in 1962 and 1963 were scored with the NES, Preliminary Form. There were 84 Achievers, 25 Underachievers, and 63 Failures at the two nursing schools during this period. These three groups served as the basis for a first cross-validation and refinement of the NES, Preliminary Form. As in the case of the Rotter ISB and MMPI scorings, elaborate precautions were taken to insure that the scorer was unaware of the achievement status of the students whose records were being scored. The measure of validity was the extent to which NES scores would differentiate the Failure from the Achiever and Underachiever groups and, to a lesser extent, NES ability to differentiate the Achiever and Underachiever groups.

## Analysis of the Data

Statistical analysis indicated significant findings (.05 level) in terms of achievement status for the L, F, Mf, Pa, Sc, and Ma scales. Comparisons of mean scores of achievement groups revealed significant between-group differentiations in the case of the L scale. In this case significant difference was noted between the Failure and Reject groups. A significant inter-school difference was noted only in the case of the K scale.

No significant differences in ISB scores were noted in terms of achievement status. In the between-school comparisons, however, it was found that Luther applicants scored lower than those applying to Holy Family.

Tests of differences between the various achievement groupings revealed that Underachievers performed significantly higher on the PNG Examination than Achievers or Failures, both of which groups scored higher than Rejects. The PNG composite scores of Holy Family applicants were significantly higher than those applying to Luther.

Tests between the various achievement groupings revealed only that Achievers, Underachievers, and Failures were of higher high school rank than Rejects. The high school ranks of applicants to both schools were substantially the same.

Of the 90 incomplete sentences of the LHSC, 59 appeared capable of eliciting some form of response which differentiated the 1961 Achiever-Failure groupings. These incomplete sentences, the categories of responses, and the scoring values became the Nursing Education Scale (NES), Preliminary Form.

In the cross-validation of the NES, Preliminary Form, differences between the various achievement groupings revealed that Achievers differed significantly from Failures. The difference between Underachievers and Failures approached significance. The difference between the Achiever and Underachiever means was not significant.

The analysis of personality-performance ratings is in terms of the principal variables: achievement status and school. In every instance, the differences between Achievers and Underachievers were statistically significant. Each time the Underachievers were rated lower, more unfavorably, than the Achievers.

In the ratings of cooperativeness, objectivity, dependability, and interpersonal relationships, significant between-school differences were observed. In each case, Luther faculty rated its students higher, more favorably, than did the Holy Family faculty.

## Discussion

MMPI and Rotter ISB - It would seem from the Phase I results that MMPI performance was not strongly related to success in nursing education. In no case was there any significant MMPI scale differentiation between Achiever and Underachiever, or Achiever and Failure, or Underachiever and Failure categories. A similar lack of relationship was noted between Rotter ISB scores and eventual performance in nursing school.

Luther Hospital Sentence Completions - The Luther Hospital Sentence Completions was designed specifically for nursing school applicants and students. There were indications that this test and its approach might have sufficient merit and potentiality to warrant additional study.

It would seem that the LHSC results can assist a faculty member in obtaining information that would come to light otherwise only after a considerable period of rather close personal association with students. The interested faculty member, counselor, or clinical psychologist should be able to obtain a fairly comprehensive point of view about a student by using the LHSC. The test performance could be used as a tentative guide to interviewing or counseling sessions.

Nursing Education Scale - While the LHSC may be valuable when used in an informal and intuitive way, it was considered important to attempt to quantify the results of this form and then relate these to achievement levels. This quantification of test results would tend to make the value of the test less dependent upon the unique skills and background of the interpreter. The findings of Phase I indicated that this attempt at quantification merited further investigation.

Differentiations in NES, Preliminary Form performance between Achievers and Failures were noted, although there were no differentiations between Underachievers and Failures nor between the Achiever and Underachiever groups. The obtained differentiations were of sufficient magnitude to suggest that the NES scores might eventually have value for screening purposes or for identification of those applicants most likely to fail. Decisions regarding the most effective utilization of limited counseling services might be made in light of NES scores.

Forty of the fifty-nine stems of the Nursing Education Scale, Preliminary Form continued to elicit responses characteristically associated with nursing student achievement. These forty stems and the scoring categories became the Nursing Education Scale (NES). In addition, in view of the high correlation (r=.96) between the 0, 1, 2, 3, and 4 point scoring system and a simpler 1, 2, and 3 point system, the latter became the accepted scoring standard for the NES.

The forty sentence stems of the NES became the Nursing Sentence Completions (NSC).

## An Exercise in Serendipity

Unanticipated findings developed through the analysis of the relationships involving high school rank, PNG performance, and the personality-performance ratings. Initially, each of these measures was of secondary interest to the mainstream of the investigation. The first two measures were used to corroborate established findings, i.e. that they were good predictors of success in nursing education. This proved to be only somewhat the case with PNG scores, and very little with high school rank. Those scoring high on the PNG tended to be successful, while those scoring low on this test tended to be unsuccessful. The personality-performance ratings were included primarily to provide faculty members with a single series of factors commonly believed to be important in student nursing. This rating procedure, together with attendant concentration upon the individual student, was designed to provide faculty members with a similar, systematic basis to be used to establish the more crucial Achiever or Underachiever designations.

As the results of the study were analyzed, however, an interesting relationship developed, which may provide the basis for additional insights into the problem of underachievement and perhaps failure-withdrawal as well. It was found that the Underachievers were significantly superior to Achievers on the PNG examination, but were significantly inferior to Achievers on each and every one of the personality-performance ratings. Now it should be noted that while performance on the PNG is related to success in nursing education, no such relationship has been demonstrated between the PNG scores and the personality-performance ratings. But, in considering various possibilities, it would have seemed reasonable to hypothesize that the Underachievers, who -- as a group -- had greater capability (PNG Examination composite score) than the Achievers, would be at least average on the personality-performance ratings. Yet they were rated substantially below the Achievers on every one of the nine individual measures.

The explanation of this is probably not a simple one. It may involve a "halo effect" which could affect the ratings, and more speculatively, the performance of the students themselves. Faculty members reported that it was very difficult to judge the student individually on each of the nine personality-performance characteristics. The faculty members reported a blurring of these difficult judgments; even highly specific acts of students contained substantial elements of two or more of these characteristics. The nine specific judgments may have been influenced by the awareness of faculty members that they would eventually be required to rate the students on the more molar measure of Achiever-Underachiever.

It may be speculated that at some time the faculty members had established a level of expectation for each student. Although this level was not formulated in any systematic fashion, it may have been used to a substantial degree on the faculty members' knowledge of the student's performance on the PNG Examination. Perhaps more was expected of those who scored high on this measure. Thus, the more highly qualified students had a "reputation" of a sort built up for them. It is possible that, very early in the course of their nursing school experience, some may not have appeared to be living up to their "advance billing". However, it would seem reasonable to assume that these individuals, even if they fell below a higher level, would still be capable of operating on a par with other less capable students. But their new "reputation" as Underachievers, deriving from an inability to measure up to a high level of expectation, may have generalized to other areas of performance.

The results of this study would indicate that these Underachievers are perceived by the faculty at both schools as inferior to students of lesser intellectual-educational ability in all nine personality-performance areas considered crucial to effective nursing. This perception might very well carry over into the interpersonal and inter-professional relationships between faculty members and the students. The faculty member, realizing the high demands and responsibilities of her profession, may take an exceedingly dim view of any student who does not work up to her potential, and may convey this low opinion to the underachieving student in many obvious or subtle ways. It might also be passed along to other faculty members who may make prior, condemnatory judgments of a student before they even know her. Such faculty-student relationships would do little to cause the Underachiever to begin to achieve fully. The tendency to overgeneralize might also cause faculty members to overlook or underemphasize areas of student strength. It is conceivable that a faculty member, acting on the basis of these perceptions, could even aggravate the situation, perhaps causing the student to withdraw or perform so poorly as to fail.

It seems important to look more closely at the role of faculty members and their interactions with students. Far from being objective evaluators and instructors, the faculty members by their reactional patterns may at times unknowingly foster student withdrawal, failure, and underachievement. The nature and magnitude of this contribution may have to undergo more intensive study if these problems are to be understood thoroughly.

In short, the prediction of success in nursing education may require increasing attention not only to the individual predispositions of students to succeed or fail, but also to circumstances within schools of nursing which precipitate the failure, underachievement, or success of the students. The measurement of these predispositions, precipitations, and the nature of the interactions among them pose interesting and challenging methodological problems (See Chapter 11).

In addition to evaluating the impact of individual nursing school faculty members upon student performance, the broad inter-school differences that might contribute to underachievement and failure-withdrawal of nursing students should by systematically explored. While the very nature of nursing education insures some uniformity among the schools, there is much room for potentially significant differences. Underachievement and failure-withdrawal from nursing schools may be partially a result of some applicants having chosen what is the "wrong" school for them.

The results of this study indicating differences in the personalities and intellectual-educational capabilities of applicants to the two schools bear only indirectly upon this area. These findings together with inter-school differences in faculty ratings suggest that the study of the individual differences among schools of nursing could be interesting and rewarding. It seems extremely unlikely that the problems of underachievement and failure-withdrawal will be understood fully if they are considered independent of the schools in which they occur. The psychological instruments used for the prediction of success in nursing education might have to undergo "corrections" or even "custom-making" for the specific schools or types of schools in which they are to be used.

## Phase I Summary

This summary related directly to the six specific aims outlined in the introduction.

1. A 90-item incomplete sentence device entitled the Luther Hospital Sentence Completions (LHSC) was constructed.

2. Of the sentence stems of the LHSC, 59 were selected to constitute the Nursing Education Scale (NES), Preliminary Form. The selection was primarily on the basis of demonstrated ability of these items to elicit differential responses from Achiever and Failure groups. Cross-validation of the NES, Preliminary Form revealed significant differentiations between Achievers and Failures, but not between Underachievers and Failures nor between Achievers and Underachievers. In the cross-validation, forty stems of the NES, Preliminary Form, continued to elicit differential response in terms of student performance. These stems and a simplified scoring procedure became the Nursing Education Scale (NES).

3. Few significant relationships were found between MMPI performance and the achievement groupings. Only on the K scale was a significant inter-school difference noted.

4. No significant relationship was found between Rotter ISB performance and the various achievement groupings. A significant difference between schools was noted in terms of Rotter ISB scores.

5. Significant achievement group differences were noted in terms of PNG scores and rank in high school graduating class.

6. The forty sentence stems of the Nursing Education Scale became the Nursing Sentence Completions (NSC).

## Phase II

### Research Design

Phase II is in large part a replication of Phase I. The same data gathering methods, and evaluation procedures were employed. Three schools of nursing were involved in this phase with Madison General Hospital School of Nursing (Madison, Wisconsin) joining Phase I participants, Luther and Holy Family schools.

The MMPI, Rotter ISB, and LHSC remained the measures of personality in Phase II. The LHSC was scored by the Nursing Education Scale (NES) in its final forty item form with the simplified 1, 2, and 3 point scoring system.

The educational-intellectual measures of Phase I, PNG composite score and high school rank were not utilized in Phase II.

The personality-performance ratings of Phase I while still required as a prelude to the achievement ratings, were not analyzed further in Phase II.

The achievement ratings of Phase II were made in the same manner as were those of Phase I. The timetable of testing and evaluations is as follows:

| Schools | | | | | |
|---|---|---|---|---|---|
| Luther | | Holy Family | | Madison General | |
| Tested | Evaluated | Tested | Evaluated | Tested | Evaluated |
| | | | | 1961 | 1963 |
| 1962 | 1964 | 1962 | 1964 | 1962 | 1964 |
| 1963 | 1965 | 1963 | 1965 | 1963 | 1965 |
| | | 1964 | 1966 | 1964 | 1966 |

Luther data involving 1964 Testing and 1966 Evaluation were omitted because it was believed that this school's announced closing might have introduced extraneous factors which might make this group different from other groups of previous years. In all, 445 students were evaluated in Phase II of this research (110 from Luther, 88 from Holy Family, and 247 from Madison General).

Phase II was concerned also with the derivation and preliminary investigation of the Nursing Sentence Completions (NSC), Nurse Attitudes Inventory (NAI), and Empathy Inventory (EI).

Efforts were made to refine the Nursing Education Scale (NES), Preliminary Form and to cross-validate the resulting Nursing Education Scale (NES). In addition, the NES total score was divided into area scores describing attitudes toward 1) nursing (N), 2) self (Se), 3) home and family (H-F), 4) responsibility (Re), 5) others, love and marriage (O-L-M), and 6) academic studies (Ac).

The research objectives of Phase II are stated in the Specific Aims section which follows. In every instance there is a reference to the chapter of this report which will give detailed information for each of these specific research areas regarding procedures employed, numbers of students involved, results obtained and implications of findings.

Specific Aims

Specific Aims 1 - 2 - 3 (See Chapters 3, 4, and 5 respectively)

To gain additional information as to whether or not 1) the Minnesota Multiphasic Personality Inventory (MMPI), 2) the Rotter Incomplete Sentence Blank (ISB), and 3) the Luther Hospital Sentence Completions (LHSC) would be useful in identifying prior to admission.

a. those students who will fail or withdraw from the program prior to graduation
b. those students who will fail to profit fully from their course of instruction even though they will probably graduate

Specific Aim 4 (See Chapter 6)

To accumulate data which would eventually be used to evaluate the effectiveness of the Nursing Sentence Completions (NSC) in predicting failure and withdrawal at 1) nursing school generally, and 2) in specific nursing schools.

Specific Aim 5a (See Chapter 7)

To construct a multiple choice test, the Nurse Attitudes Inventory (NAI), for the purpose of providing nursing schools with a routine technique for detecting those students likely to withdraw or fail.

Specific Aim 5b (See Chapter 7)

To accumulate data on the Nurse Attitudes Inventory (NAI) as the basis for determining eventually whether or not this test could predict achievement in nursing school.

Specific Aim 6 (See Chapter 8)

To refine the Nursing Education Scale (NES) by the development of subtests on six attitudinal areas.

Specific Aim 7 (See Chapter 9)

To evaluate the inter-relationships of student LHSC, NSC, and NAI performances as scored by the NES.

Specific Aim 8 (See Chapter 10)

To investigate the application of a statistical technique, discriminant function, in predicting nursing school achievement.

Specific Aim 9 (See Chapter 11)

To construct a test to be called the Empathy Inventory (EI) which could be used in measuring the ability of nursing school faculty members to understand their students.

Specific Aim 10 (See Chapter 12)

To summarize the findings as deriving from preceding Specific Aims and to discuss the implications in terms of practical application and further research.

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## Chapter 3

## The Minnesota Multiphasic Personality Inventory

### Introduction

In the early 1940's the development of the Minnesota Multiphasic Personality Inventory (MMPI) provided an effective psychological test for scientific investigations in many areas of psychology and psychiatry. Literally thousands of studies involving the MMPI have been conducted in the last two decades, ranging all the way from psychiatric investigations (Benton, 1946, Lauterbach and others, 1962), to the field of tuberculosis (Calden and others, 1955), to college behavior (Anderson, 1956). It was almost inevitable, therefore, that the MMPI be considered as a potential aid in describing the personality of nursing students and making predictions regarding their academic and clinical performance. However, Lough (1947) came to the conclusion that MMPI results were not particularly helpful in vocational guidance of college women, including nursing students. Beaver (1953) reported that she found the mean scores on all MMPI scales to be nearly identical for students who failed and those who graduated. Weisgerber (1951) found some correlations between MMPI performance and various ratings of personality, but concluded that the MMPI could not be used safely for predictive purposes involving nursing students without further research. He found that the group of students which he studied obtained appreciably higher means on some of the scales than did the MMPI normative population. In view of this, Weisgerber (1954) felt that the general norms were not perfectly applicable and he constructed special norms for the MMPI using 168 nursing students. Weisgerber concluded that the use of these special norms might be more appropriate than published norms in making specific predictions regarding nursing students.

With this review of MMPI research in mind, the MMPI was selected for inclusion in the test battery of this research. It was believed of interest to explore fully the relationship of MMPI performance to achievement in nursing schools and to use these results to tie this study more closely to other studies and established theoretical knowledge in the field of psychology.

In Phase I research Thurston and Brunclik (1965) found a general relationship between nursing school achievement and performance on the MMPI Lie, F, Masculinity-Femininity, Paranoia, Schizophrenia, and Hypomania scales. However, comparisons of mean scores of specific achievement groups revealed differences only in the case of the Lie scale with failures less apt to "lie" than the rejects. A significant inter-school MMPI difference was noted only in the case of the K scale. In other research involving students already attending school, it was found that the underachievers scored significantly higher on the Pd and Pa than did the achievers at one school while no such difference was noted at the other two schools involved in this investigation (Thurston, Brunclik and Finn, 1961). No inter-school MMPI differences were noted.

Phase II research on the MMPI embodies the same approach as that of Phase I but with two changes: another school was added to the program and the MMPI performance of rejected students was no longer included in the analysis.

## Procedure

The nature of the complete test battery, method of administration, timetable of evaluation and the populations studied have all been described in Chapter 2. The Minnesota Multiphasic Personality Inventory (Hathaway and McKinley, 1951) is a psychometric instrument designed to produce, in a single test, scores on all the more important clinically-defined aspects of personality. Five hundred and fifty statements covering a wide variety of subject matter make up the content of this test. The person taking the MMPI is asked to respond to each of the statements by either true or false as it pertained to him. Items are included that cover the physical condition of the person as well as his social attitudes. Some examples are: "I am very careful of my manner of dress," "I like movie love scenes," "I am greatly bothered by forgetting where I put things," "My face has never been paralyzed," "I am sure I get a raw deal from life."

The validity scales of this test are labelled L (lie scale), F (carelessness or misunderstanding in responding), and K (tendency to be excessively defensive or self-critical in responding). The clinical scales are Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Psychopathic Deviate (Pd), Masculinity-Femininity (Mf), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma), and Social-Introversion (Si).

## Results

The results of this portion of the study are shown in Tables 3.1 - 3.39. Analyses of variance were undertaken in terms of the two principal variables, achievement status and school (Scheffe', 1960). The results are presented in the form of mean performance, differences between means, and analysis of variance respectively for the following MMPI scales: Lie (3.1, 3.2, 3.3), F (3.4, 3.5, 3.6), K (3.7, 3.8, 3.9), Hypochondriasis (3.10, 3.11, 3.12), Depression (3.13, 3.14, 3.15), Hysteria (3.16, 3.17, 3.18), Psychopathic Deviate (3.19, 3.20, 3.21), Masculinity-Femininity (3.22, 3.23, 3.24), Paranoia (3.25, 3.26, 3.27), Psychasthenia (3.28, 3.29, 3.30), Schizophrenia (3.31, 3.32, 3.33), Hypomania (3.34, 3.35, 3.36), and Social Introversion-Extraversion (3.37, 3.38, 3.39).

The analyses of variance revealed only one significant F ratio. The F of 3.50 for the Paranoia Scale (2 and 436 d.f.) (Table 3.27) was significant for achievement status at the .05 level. However, in subsequent tests of the differences between pairs of achievement means, none of the differences was found to be significant (Table 3.26). It should also be pointed out that this lack of significant relationships is consistent with the findings developed in the course of Phase I of this research.

## Discussion

The results obtained in Phase II of this study indicate that MMPI performance was unrelated to achievement in nursing education. None of the scales produced a significant MMPI differentiation between Achiever and Underachiever, or Achiever and Failure, or Underachiever and Failure categories. This lack of relationship had previously been found in Phase I of this research.

One must acknowledge, however, that the method of MMPI administration may have been such as to obscure relationships between test performance and achievement. The unsupervised nature of the testing may have allowed some students to modify their responses in ways which might reduce the possibility of discerning psychological differences between people representing the different achievement groups. However, the results reported in Chapter 5 suggest that there are relationships between achievement and LHSC performance even though the LHSC was administered without supervision.

In summary it would seem that the MMPI, a personality test designed for other purposes, cannot be used to predict success in nursing education. If the MMPI were used at all for selecting or counseling student nurses, it would be necessary to employ a psychologist who was skilled in the use of the MMPI and willing to submit his judgments to empirical tests.

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Table 3. 1

MEAN PRE-ADMISSION MMPI L SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 51.84<br>S.D. = 8.08 | N = 17<br>M = 50.65<br>S.D. = 7.63 | N = 43<br>M = 47.49<br>S.D. = 6.35 | N = 110<br>M = 49.95<br>S.D. = 7.59 |
| Holy Family Hospital | N = 56<br>M = 52.39<br>S.D. = 7.87 | N = 17<br>M = 50.29<br>S.D. = 8.30 | N = 15<br>M = 51.13<br>S.D. = 5.60 | N = 88<br>M = 51.77<br>S.D. = 7.59 |
| Madison General Hospital | N = 113<br>M = 50.12<br>S.D. = 7.57 | N = 45<br>M = 50.11<br>S.D. = 8.03 | N = 89<br>M = 49.72<br>S.D. = 6.84 | N = 247<br>M = 49.98<br>S.D. = 7.38 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 51.10<br>S.D. = 7.80 | N = 79<br>M = 50.27<br>S.D. = 7.90 | N = 147<br>M = 49.21<br>S.D. = 6.65 | N = 445<br>M = 50.36<br>S.D. = 7.65 |

Table 3.2

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI LIE SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 51.10 - 50.27 | + .83 |
| Achiever - Failure | 51.10 - 49.21 | +1.89 |
| Underachiever - Failure | 50.27 - 49.21 | +1.06 |
| School of Nursing | | |
| Luther - Holy Family | 49.95 - 51.77 | -1.82 |
| Luther - Madison General | 49.95 - 49.98 | - .03 |
| Holy Family - Madison General | 51.77 - 49.98 | +1.79 |

Table 3.3

ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI LIE SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 151.52 | 75.76 | 1.37 |
| Achievement Status | 2 | 198.83 | 99.41 | 1.79 |
| Achievement Status x Nursing School | 4 | 286.42 | 71.61 | 1.29 |
| Within Cell | 436 | 24,150.67 | 55.39 | |
| Total | 444 | 24,787.44 | | |

Table 3.4

## MEAN PRE-ADMISSION MMPI F SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 48.16<br>S.D. = 2.91 | N = 17<br>M = 49.00<br>S.D. = 3.43 | N = 43<br>M = 49.72<br>S.D. = 5.83 | N = 110<br>M = 48.90<br>S.D. = 4.38 |
| Holy Family Hospital | N = 56<br>M = 47.50<br>S.D. = 2.71 | N = 17<br>M = 48.24<br>S.D. = 3.98 | N = 15<br>M = 47.87<br>S.D. = 3.09 | N = 88<br>M = 47.70<br>S.D. = 3.03 |
| Madison General Hospital | N = 113<br>M = 48.83<br>S.D. = 4.06 | N = 45<br>M = 48.53<br>S.D. = 4.02 | N = 89<br>M = 48.72<br>S.D. = 3.90 | N = 247<br>M = 48.74<br>S.D. = 3.98 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 48.34<br>S.D. = 3.54 | N = 79<br>M = 48.57<br>S.D. = 3.85 | N = 147<br>M = 48.93<br>S.D. = 4.49 | N = 445<br>M = 48.57<br>S.D. = 4.13 |

Table 3.5

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI F SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 48.34 - 48.57 | - .23 |
| Achiever - Failure | 48.34 - 48.93 | - .59 |
| Underachiever - Failure | 48.57 - 48.93 | - .36 |
| School of Nursing | | |
| Luther - Holy Family | 48.90 - 47.70 | +1.10 |
| Luther - Madison General | 48.90 - 48.74 | + .16 |
| Holy Family - Madison General | 47.70 - 48.74 | -1.04 |

Table 3.6

ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI F SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 63.88 | 31.94 | 2.07 |
| Achievement Status | 2 | 13.01 | 6.51 | .42 |
| Achievement Status x Nursing School | 4 | 51.04 | 12.76 | .83 |
| Within Cell | 436 | 6,717.17 | 15.41 | |
| Total | 444 | 6,845.10 | | |

Table 3.7

MEAN PRE-ADMISSION MMPI K SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 61.10<br>S.D. = 8.73 | N = 17<br>M = 60.35<br>S.D. = 7.67 | N = 43<br>M = 57.30<br>S.D. = 7.16 | N = 110<br>M = 59.50<br>S.D. = 8.11 |
| Holy Family Hospital | N = 56<br>M = 61.70<br>S.D. = 7.78 | N = 17<br>M = 60.53<br>S.D. = 8.35 | N = 15<br>M = 59.60<br>S.D. = 8.22 | N = 88<br>M = 61.11<br>S.D. = 7.91 |
| Madison General Hospital | N = 113<br>M = 61.31<br>S.D. = 7.82 | N = 45<br>M = 60.22<br>S.D. = 8.80 | N = 89<br>M = 61.47<br>S.D. = 7.69 | N = 247<br>M = 61.17<br>S.D. = 7.94 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 61.36<br>S.D. = 7.99 | N = 79<br>M = 60.32<br>S.D. = 8.37 | N = 147<br>M = 60.06<br>S.D. = 7.77 | N = 445<br>M = 60.74<br>S.D. = 8.02 |

Table 3.8

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI K SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 61.36 - 60.32 | +1.04 |
| Achiever - Failure | 61.36 - 60.06 | +1.30 |
| Underachiever - Failure | 60.32 - 60.06 | + .26 |
| School of Nursing | | |
| Luther - Holy Family | 59.50 - 61.11 | -1.61 |
| Luther - Madison General | 59.50 - 61.17 | -1.67 |
| Holy Family - Madison General | 61.11 - 61.17 | - .06 |

Table 3.9

ANALYSIS OF VARIANCE FOR PRE-ADMISSION
MMPI K SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 159.97 | 79.98 | 1.26 |
| Achievement Status | 2 | 149.89 | 74.95 | 1.18 |
| Achievement Status x Nursing School | 4 | 305.27 | 76.32 | 1.20 |
| Within Cell | 436 | 27,681.28 | 63.49 | |
| Total | 444 | 28,296.41 | | |

Table 3.10

### MEAN PRE-ADMISSION MMPI HYPOCHONDRIASIS SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 47.96<br>S.D. = 5.02 | N = 17<br>M = 47.65<br>S.D. = 7.47 | N = 43<br>M = 45.51<br>S.D. = 4.94 | N = 110<br>M = 46.95<br>S.D. = 5.50 |
| Holy Family Hospital | N = 56<br>M = 47.38<br>S.D. = 4.77 | N = 17<br>M = 46.71<br>S.D. = 5.32 | N = 15<br>M = 48.40<br>S.D. = 6.10 | N = 88<br>M = 47.42<br>S.D. = 5.09 |
| Madison General Hospital | N = 113<br>M = 47.15<br>S.D. = 4.74 | N = 45<br>M = 45.24<br>S.D. = 4.77 | N = 89<br>M = 48.13<br>S.D. = 4.61 | N = 247<br>M = 47.16<br>S.D. = 4.79 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 47.39<br>S.D. = 4.80 | N = 79<br>M = 46.08<br>S.D. = 5.58 | N = 147<br>M = 47.39<br>S.D. = 4.99 | N = 445<br>M = 47.22<br>S.D. = 5.13 |

Table 3.11

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI HYPOCHONDRIASIS SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 47.39 - 46.08 | +1.31 |
| Achiever - Failure | 47.39 - 47.39 | .00 |
| Underachiever - Failure | 46.08 - 47.39 | -1.31 |
| School of Nursing | | |
| Luther - Holy Family | 46.95 - 47.42 | - .47 |
| Luther - Madison General | 46.95 - 47.16 | - .21 |
| Holy Family - Madison General | 47.42 - 47.16 | + .26 |

Table 3.12

ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI HYPOCHONDRIASIS SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 13.72 | 6.86 | .28 |
| Achievement Status | 2 | 113.82 | 56.91 | 2.30 |
| Achievement Status x Nursing School | 4 | 305.52 | 76.38 | 3.09* |
| Within Cell | 436 | 10,765.95 | 24.69 | |
| Total | 444 | 11,199.01 | | |

* Significant at .05 level

Table 3.13

### MEAN PRE-ADMISSION MMPI DEPRESSION SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 45.30<br>S.D. = 7.17 | N = 17<br>M = 46.82<br>S.D. = 9.49 | N = 43<br>M = 45.16<br>S.D. = 5.74 | N = 110<br>M = 45.48<br>S.D. = 7.03 |
| Holy Family Hospital | N = 56<br>M = 45.02<br>S.D. = 6.15 | N = 17<br>M = 44.94<br>S.D. = 6.68 | N = 15<br>M = 46.87<br>S.D. = 5.73 | N = 88<br>M = 45.32<br>S.D. = 6.15 |
| Madison General Hospital | N = 113<br>M = 45.21<br>S.D. = 6.54 | N = 45<br>M = 44.47<br>S.D. = 5.77 | N = 89<br>M = 45.45<br>S.D. = 5.81 | N = 247<br>M = 45.16<br>S.D. = 6.13 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 45.18<br>S.D. = 6.56 | N = 79<br>M = 45.07<br>S.D. = 6.88 | N = 147<br>M = 45.51<br>S.D. = 5.76 | N = 445<br>M = 45.34<br>S.D. = 6.02 |

Table 3.14

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI DEPRESSION SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 45.18 - 45.07 | + .11 |
| Achiever - Failure | 45.18 - 45.51 | - .33 |
| Underachiever - Failure | 45.07 - 45.51 | - .44 |
| School of Nursing | | |
| Luther - Holy Family | 45.48 - 45.32 | + .16 |
| Luther - Madison General | 45.48 - 45.16 | + .32 |
| Holy Family - Madison General | 45.32 - 45.16 | + .16 |

## Table 3.15

## ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI DEPRESSION SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 17.42 | 8.71 | .21 |
| Achievement Status | 2 | 21.11 | 10.55 | .26 |
| Achievement Status x Nursing School | 4 | 96.05 | 24.01 | .59 |
| Within Cell | 436 | 17,820.63 | 40.87 | |
| Total | 444 | 17,955.21 | | |

Table 3.16

## MEAN PRE-ADMISSION MMPI HYSTERIA SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 51.92<br>S.D. = 6.56 | N = 17<br>M = 52.53<br>S.D. = 7.58 | N = 43<br>M = 52.42<br>S.D. = 5.32 | N = 110<br>M = 52.21<br>S.D. = 6.22 |
| Holy Family Hospital | N = 56<br>M = 52.73<br>S.D. = 6.29 | N = 17<br>M = 53.76<br>S.D. = 6.65 | N = 15<br>M = 54.87<br>S.D. = 6.57 | N = 88<br>M = 53.30<br>S.D. = 6.38 |
| Madison General Hospital | N = 113<br>M = 52.88<br>S.D. = 6.27 | N = 45<br>M = 51.13<br>S.D. = 6.68 | N = 89<br>M = 53.97<br>S.D. = 5.96 | N = 247<br>M = 52.95<br>S.D. = 6.29 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 52.62<br>S.D. = 6.32 | N = 79<br>M = 52.00<br>S.D. = 6.87 | N = 147<br>M = 53.60<br>S.D. = 5.86 | N = 445<br>M = 52.88<br>S.D. = 6.21 |

Table 3.17

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI HYSTERIA SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 52.62 - 52.00 | + .62 |
| Achiever - Failure | 52.62 - 53.60 | - .98 |
| Underachiever - Failure | 52.00 - 53.60 | -1.60 |
| School of Nursing | | |
| Luther - Holy Family | 52.21 - 53.30 | -1.09 |
| Luther - Madison General | 52.21 - 52.95 | - .74 |
| Holy Family - Madison General | 53.30 - 52.95 | + .35 |

Table 3.18

ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI HYSTERIA SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 92.30 | 46.15 | 1.17 |
| Achievement Status | 2 | 180.13 | 90.06 | 2.28 |
| Achievement Status x Nursing School | 4 | 127.85 | 31.96 | .81 |
| Within Cell | 436 | 17,188.55 | 39.42 | |
| Total | 444 | 17,588.83 | | |

Table 3.19

MEAN PRE-ADMISSION MMPI PSYCHOPATHIC DEVIATE SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50 | N = 17 | N = 43 | N = 110 |
| | M = 54.74 | M = 58.35 | M = 55.72 | M = 55.68 |
| | S.D. = 7.43 | S.D. = 5.31 | S.D. = 7.65 | S.D. = 7.28 |
| Holy Family Hospital | N = 56 | N = 17 | N = 15 | N = 88 |
| | M = 54.71 | M = 55.88 | M = 57.40 | M = 55.40 |
| | S.D. = 7.32 | S.D. = 9.85 | S.D. = 7.10 | S.D. = 7.80 |
| Madison General Hospital | N = 113 | N = 45 | N = 89 | N = 247 |
| | M = 56.65 | M = 55.73 | M = 56.58 | M = 56.46 |
| | S.D. = 8.41 | S.D. = 6.78 | S.D. = 7.65 | S.D. = 7.84 |
| | | | | Total |
| Achievement Status Means | N = 219 | N = 79 | N = 147 | N = 445 |
| | M = 55.72 | M = 56.33 | M = 56.42 | M = 56.15 |
| | S.D. = 7.95 | S.D. = 7.27 | S.D. = 7.56 | S.D. = 7.40 |

Table 3.20

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI PSYCHOPATHIC DEVIATE SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 55.72 - 56.33 | - .61 |
| Achiever - Failure | 55.72 - 56.42 | - .70 |
| Underachiever - Failure | 56.33 - 56.43 | - .10 |
| School of Nursing | | |
| Luther - Holy Family | 55.68 - 55.40 | + .28 |
| Luther - Madison General | 55.68 - 56.46 | + .22 |
| Holy Family - Madison General | 55.40 - 56.46 | -1.06 |

Table 3.12

## ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI PSYCHOPATHIC-DEVIATE SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 54.20 | 27.10 | .46 |
| Achievement Status | 2 | 54.25 | 26.13 | .44 |
| Achievement Status x Nursing School | 4 | 247.25 | 61.81 | 1.04 |
| Within Cell | 436 | 25,915.23 | 59.44 | |
| Total | 444 | 26,270.93 | | |

Table 3.22

### MEAN PRE-ADMISSION MMPI MASCULINITY-FEMININITY SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 47.84<br>S.D. = 9.71 | N = 17<br>M = 49.29<br>S.D. = 7.86 | N = 43<br>M = 47.98<br>S.D. = 5.41 | N = 110<br>M = 48.12<br>S.D. = 7.94 |
| Holy Family Hospital | N = 56<br>M = 50.66<br>S.D. = 9.06 | N = 17<br>M = 51.59<br>S.D. = 7.21 | N = 15<br>M = 49.93<br>S.D. = 5.59 | N = 88<br>M = 50.72<br>S.D. = 8.17 |
| Madison General Hospital | N = 113<br>M = 48.19<br>S.D. = 8.38 | N = 45<br>M = 49.31<br>S.D. = 9.83 | N = 89<br>M = 47.65<br>S.D. = 6.66 | N = 247<br>M = 48.20<br>S.D. = 8.09 |
| | | | | Total |
| Achievement Status | N = 219<br>M = 48.74<br>S.D. = 8.90 | N = 79<br>M = 49.80<br>S.D. = 8.87 | N = 147<br>M = 47.98<br>S.D. = 6.21 | N = 445<br>M = 48.66<br>S.D. = 7.24 |

Table 3.23

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI MASCULINITY-FEMININITY SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 48.74 - 49.80 | -1.06 |
| Achiever - Failure | 48.74 - 47.98 | + .76 |
| Underachiever - Failure | 49.80 - 47.98 | +1.82 |
| School of Nursing | | |
| Luther - Holy Family | 48.12 - 50.72 | -2.60 |
| Luther - Madison General | 48.12 - 48.20 | - .08 |
| Holy Family - Madison General | 50.72 - 48.20 | +2.52 |

Table 3.24

## ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI MASCULINITY-FEMININITY SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 353.03 | 176.52 | 2.69 |
| Achievement Status | 2 | 125.80 | 62.90 | .96 |
| Achievement Status x Nursing School | 4 | 9.18 | 2.29 | .03 |
| Within Cell | 436 | 28,635.80 | 65.68 | |
| Total | 444 | 29,123.81 | | |

Table 3.25

MEAN PRE-ADMISSION MMPI PARANOIA SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 53.34<br>S.D. = 6.14 | N = 17<br>M = 53.88<br>S.D. = 6.14 | N = 43<br>M = 53.65<br>S.D. = 7.43 | N = 110<br>M = 53.55<br>S.D. = 6.61 |
| Holy Family Hospital | N = 56<br>M = 53.73<br>S.D. = 6.05 | N = 17<br>M = 52.76<br>S.D. = 8.56 | N = 15<br>M = 53.13<br>S.D. = 7.48 | N = 88<br>M = 53.44<br>S.D. = 6.77 |
| Madison General Hospital | N = 113<br>M = 53.07<br>S.D. = 7.67 | N = 45<br>M = 49.84<br>S.D. = 7.42 | N = 89<br>M = 54.55<br>S.D. = 6.53 | N = 247<br>M = 53.02<br>S.D. = 7.39 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 53.30<br>S.D. = 6.93 | N = 79<br>M = 51.34<br>S.D. = 7.54 | N = 147<br>M = 54.14<br>S.D. = 6.87 | N = 445<br>M = 53.20<br>S.D. = 6.99 |

Table 3.26

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI PARANOIA SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 53.30 - 51.34 | +1.96 |
| Achiever - Failure | 53.30 - 54.14 | - .84 |
| Underachiever - Failure | 51.34 - 54.14 | -2.80 |
| School of Nursing | | |
| Luther - Holy Family | 53.55 - 53.44 | + .11 |
| Luther - Madison General | 53.55 - 53.02 | + .53 |
| Holy Family - Madison General | 53.44 - 53.02 | + .42 |

Table 3.27

## ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI PARANOIA SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 25.56 | 12.78 | .26 |
| Achievement Status | 2 | 345.36 | 172.68 | 3.50* |
| Achievement Status x Nursing School | 4 | 270.63 | 67.66 | 1.37 |
| Within Cell | 436 | 21,491.92 | 49.29 | |
| Total | 444 | 22,133.47 | | |

* Significant at .05 level

Table 3. 28

MEAN PRE-ADMISSION MMPI PSYCHASTHENIA SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50 | N = 17 | N = 43 | N = 110 |
| | M = 51.76 | M = 52.53 | M = 52.09 | M = 52.01 |
| | S.D. = 5.00 | S.D. = 5.74 | S.D. = 6.66 | S.D. = 5.77 |
| Holy Family Hospital | N = 56 | N = 17 | N = 15 | N = 88 |
| | M = 51.71 | M = 49.58 | M = 51.47 | M = 51.26 |
| | S.D.= 5.60 | S.D. = 5.36 | S.D. = 8.60 | S.D. = 6.14 |
| Madison General Hospital | N = 113 | N = 45 | N = 89 | N = 247 |
| | M = 52.04 | M = 49.29 | M = 51.74 | M = 51.43 |
| | S.D. = 6.59 | S.D. = 5.44 | S.D. = 5.84 | S.D. = 6.19 |
| | | | | Total |
| Achievement Status Means | N = 219 | N = 79 | N = 147 | N = 445 |
| | M = 51.90 | M = 50.05 | M = 51.82 | M = 51.55 |
| | S.D. = 5.99 | S.D. = 5.57 | S.D. = 6.36 | S.D. = 6.14 |

Table 3.29

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI PSYCHOSTHENIA SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 51.90 - 50.05 | +1.85 |
| Achiever - Failure | 51.90 - 51.82 | + .08 |
| Underachiever - Failure | 50.05 - 51.82 | -1.77 |
| School of Nursing | | |
| Luther - Holy Family | 52.01 - 51.26 | - .75 |
| Luther - Madison General | 52.01 - 51.43 | + .58 |
| Holy Family - Madison General | 51.26 - 51.43 | - .17 |

Table 3. 30

ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI PSYCHASTHENIA SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 31.22 | 15.61 | .43 |
| Achievement Status | 2 | 188.44 | 94.22 | 2.57 |
| Achievement Status Nursing School | 4 | 115.88 | 28.97 | .79 |
| Within Cell | 436 | 16,007.38 | 36.71 | |
| Total | 444 | 16,342.92 | | |

Table 3.31

MEAN PRE-ADMISSION MMPI SCHIZOPHRENIA SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 52.68<br>S.D. = 5.14 | N = 17<br>M = 54.35<br>S.D. = 5.85 | N = 43<br>M = 52.26<br>S.D. = 6.79 | N = 110<br>M = 52.77<br>S.D. = 5.93 |
| Holy Family Hospital | N = 56<br>M = 53.29<br>S.D. = 4.90 | N = 17<br>M = 51.18<br>S.D. = 6.45 | N = 15<br>M = 54.53<br>S.D. = 6.33 | N = 88<br>M = 53.09<br>S.D. = 5.51 |
| Madison General Hospital | N = 113<br>M = 53.16<br>S.D. = 6.64 | N = 45<br>M = 51.96<br>S.D. = 5.45 | N = 89<br>M = 54.37<br>S.D. = 5.88 | N = 247<br>M = 53.38<br>S.D. = 6.21 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 53.08<br>S.D. = 5.89 | N = 79<br>M = 52.30<br>S.D. = 5.79 | N = 147<br>M = 53.77<br>S.D. = 6.24 | N = 445<br>M = 53.22<br>S.D. = 6.01 |

Table 3.32

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI SCHIZOPHRENIA SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 53.08 - 52.30 | + .78 |
| Achiever - Failure | 53.08 - 53.77 | - .69 |
| Underachiever - Failure | 52.30 - 53.77 | -1.47 |
| School of Nursing | | |
| Luther - Holy Family | 52.77 - 53.09 | - .32 |
| Luther - Madison General | 52.77 - 53.38 | - .61 |
| Holy Family - Madison General | 53.09 - 53.38 | - .29 |

### Table 3.33

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI SCHIZOPHRENIA SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 20.58 | 10.29 | .29 |
| Achievement Status | 2 | 116.66 | 58.33 | 1.63 |
| Achievement Status x Nursing School | 4 | 216.91 | 54.23 | 1.51 |
| Within Cell | 436 | 15,622.41 | 35.83 | |
| Total | 444 | 15,976.56 | | |

Table 3.34

MEAN PRE-ADMISSION MMPI HYPOMANIA SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 53.82<br>S.D. =10.88 | N = 17<br>M = 53.53<br>S.D. =10.21 | N = 43<br>M = 56.26<br>S.D. =10.98 | N = 110<br>M = 54.73<br>S.D. =10.79 |
| Holy Family Hospital | N = 56<br>M = 53.29<br>S.D. = 7.21 | N = 17<br>M = 52.71<br>S.D. = 7.84 | N = 15<br>M = 57.80<br>S.D. = 9.32 | N = 88<br>M = 54.00<br>S.D. = 7.82 |
| Madison General Hospital | N = 113<br>M = 55.21<br>S.D. = 9.87 | N = 45<br>M = 54.18<br>S.D. =10.32 | N = 89<br>M = 54.53<br>S.D. =10.01 | N = 247<br>M = 54.78<br>S.D. = 9.97 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 54.42<br>S.D. = 9.51 | N = 79<br>M = 53.72<br>S.D. = 9.72 | N = 147<br>M = 55.37<br>S.D. =10.23 | N = 445<br>M = 54.73<br>S.D. =10.02 |

Table 3. 35

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI HYPOMANIA SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 54.42 - 53.72 | + .70 |
| Achiever - Failure | 54.42 - 55.37 | - .95 |
| Underachiever - Failure | 53.72 - 55.37 | -1.65 |
| School of Nursing | | |
| Luther - Holy Family | 54.73 - 54.00 | + .73 |
| Luther - Madison General | 54.73 - 54.78 | - .05 |
| Holy Family - Madison General | 54.00 - 54.78 | - .78 |

Table 3. 36

## ANALYSIS OF VARIANCE FOR PRE-ADMISSION MMPI HYPOMANIA SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 3. 98 | 1. 99 | . 02 |
| Achievement Status | 2 | 191. 28 | 95. 64 | . 99 |
| Achievement Status Nursing School | 4 | 339. 45 | 84. 86 | . 88 |
| Within Cell | 436 | 42, 022. 55 | 96. 38 | |
| Total | 444 | 42, 557. 26 | | |

Table 3. 37

### MEAN PRE-ADMISSION MMPI SOCIAL INTROVERSION-EXTRAVERSION SCALE SCORES BY ACHIEVEMENT STATUS AND NURSING AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 48.32<br>S.D. = 8.35 | N = 17<br>M = 52.12<br>S.D. = 10.40 | N = 43<br>M = 45.90<br>S.D. = 5.62 | N = 110<br>M = 47.96<br>S.D. = 7.99 |
| Holy Family Hospital | N = 56<br>M = 46.93<br>S.D. = 7.37 | N = 17<br>M = 47.00<br>S.D. = 8.98 | N = 15<br>M = 47.53<br>S.D. = 7.30 | N = 88<br>M = 47.05<br>S.D. = 7.60 |
| Madison General Hospital | N = 113<br>M = 47.04<br>S.D. = 7.63 | N = 45<br>M = 46.84<br>S.D. = 6.90 | N = 89<br>M = 45.29<br>S.D. = 6.59 | N = 247<br>M = 46.38<br>S.D. = 7.15 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 47.31<br>S.D. = 7.72 | N = 79<br>M = 48.01<br>S.D. = 8.38 | N = 147<br>M = 45.70<br>S.D. = 6.39 | N = 445<br>M = 47.01<br>S.D. = 7.50 |

Table 3.38

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON THE PRE-ADMISSION MMPI SOCIAL INTROVERSION-EXTRAVERSION SCALE

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 47.31 - 48.01 | - .70 |
| Achiever - Failure | 47.31 - 45.70 | +1.61 |
| Underachiever - Failure | 48.01 - 45.70 | +2.31 |
| School of Nursing | | |
| Luther - Holy Family | 47.96 - 47.05 | + .91 |
| Luther - Madison General | 47.96 - 46.38 | +1.58 |
| Holy Family - Madison General | 47.05 - 46.38 | + .67 |

Table 3. 39

ANALYSIS OF VARIANCE FOR PRE-ADMISSION
MMPI SOCIAL INTROVERSION-EXTRAVERSION SCALE SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 236.49 | 118.25 | 2.15 |
| Achievement Status | 2 | 298.15 | 149.07 | 2.72 |
| Achievement Status x Nursing School | 4 | 288.71 | 72.18 | 1.32 |
| Within Cell | 436 | 23,924.83 | 54.87 | |
| Total | 444 | 24,748.18 | | |

# Chapter 4

# The Rotter Incomplete Sentence Blank (ISB)

## Introduction

### The Sentence Completion Method

A sentence completion form, or incomplete sentence blank as it is sometimes called, is composed of a number of sentence stems that are presented to the individual for completion. Examples of these sentence stems are: "I regret ....," "I get embarrassed if ....," or "I need ....." In completing stems such as these, it is assumed that an individual expresses many emotions: fears, likes, dislikes, and wishes. The test may be given orally with the tester recording the individual's verbal responses, and it may be employed when a counselor wishes to use the sentence stems as the basis for a systematic, semi-structured personal interview.

The sentence completion method has a number of advantages over the traditional "paper and pencil" personality inventories. The person responding to most tests can answer only "yes" or "no" to a series of direct questions. In answer to the question "Do you get embarrassed?" a student or prospective student can only affirm or deny this experience. The sentence completion method, however, permits a wide range of response. The student is encouraged to express personal feelings. If she is asked, for example, to complete the sentence, "I get embarrassed if ....," she has a greater opportunity to express her own unique feelings and emotions. One student might stress her discomfiture at being required to participate in front of her schoolmates in a classroom situation, another student might state her concern over uncomfortable social relationships, still another student might admit to general embarrassment under almost any circumstance.

### Some General Research Involving Sentence Completion Forms

The sentence completion form began as an outgrowth of word association tests and were first used by Payne in 1928. Rohde (1946), and Rotter and Willerman (1947) were particularly active in the early development of this technique. Stein (1947) used this technique with the mentally ill and reported that it was helpful in studying behavior and personality.

The United States Air Force Research personnel used the technique during World War II to obtain information for use in a counseling program at the time of discharge (Flanagan, 1948). Wilson (1949) found that a specially constructed sentence completion form was helpful in differentiating between well-adjusted and maladjusted secondary school pupils. Sacks and Levy (1950) reported that this technique was useful as a measure of individual attitudes of patients in mental hygiene clinics. Cruickshank (1951) evaluated the relationship of physical disability to personal aspiration by means of this device. Lindgren (1952) used incomplete sentences as a means of course evaluation. He found that it was superior to a checklist and a questionnaire in the measurement of attitudinal changes.

Allport (1953, p. 64) says:

> "The first-person completion is so direct that in the psychoneurotic it invokes the mask of defense and elicits a merely conventionally correct response.
>
> Thus the direct responses of the psychoneurotic cannot be taken at their face value. The defenses are high, the true motives are hidden and are betrayed only by a projective technique. The normal subjects on the other hand, tell you by the direct method precisely what they tell you by the projective method. You may therefore take their motivational statements at their face value, for even if you probe you will not find anything substantially different."

Calden (1953) applied sentence completion technique to measure the attitudes of tuberculosis patients. Thurston used a device of this sort to study the attitudes of parents of severely handicapped, mentally retarded children (1959, 1960) and those of children who misbehave in the classroom (Feldhusen, Thurston and Benning, 1966).

## Some Research Studies Using the Rotter ISB

The Rotter Incomplete Sentence Blank (ISB) was standardized for use at the college level. It consists of 40 "stems" to be completed by the student. Rotter constructed the ISB with stems from a form that had been used by Rotter and Willerman (1947) in the Army. This form was a revision of blanks used by Hutt (1945), Shor (1946), and Holzberg (1947). These forms in turn may have been derived from incomplete sentence tests copyrighted by Rohde and Hildreth in 1941 (Rohde, 1948). Rotter, Rafferty, and Schachtitz (1949) reported that the ISB was efficient as a tool in screening college students for possible emotional disturbances. Hadley and Kennedy (1949) used the ISB to investigate the relationship between conflict and academic achievement. They correlated the ISB performance of 157 students enrolled in an introductory course in psychology with measures of their academic achievement. One of their hypotheses was that individuals of high intelligence who score below expected performance in college class work are those who are more likely to experience conflict than those students whose academic work is in accord with their measured general ability. This hypothesis was supported and they concluded that:

> "The discrepancies found between high-tested intelligence and relatively low scholastic achievement may in part be attributed to emotional disturbances. The use of the sentence completion test in identifying those individuals who may do poorly in college coursework because of emotional immaturity seems promising."

Billard (1962) made a comparison of the ISB scores of 106 high school freshmen and teacher ratings of these students. He reports that teacher ratings correlated highly with the Rotter scores and concluded that the test results would allow identification of students who were troubled with anxieties about their environment. Rotter and Rafferty (1950) reported additional validity studies in the test manual designed to accompany the ISB.

### Previous Studies Using Rotter ISB with Nursing Students

Relatively little research has been reported regarding the use of sentence completion forms in nursing. In a study by Couey and Couey (1957) which evaluated nursing student "adjustment to the environment", sixty-one per cent of the students scored above the critical score as established by Rotter and Rafferty (1950). The authors reported that these ISB scores were higher than expected and attributed this to undefined "pressures". In order to plot profiles, Couey and Couey divided ISB items into three areas: personal problems, self perception, and social attitudes. No attempt was made by them to relate either the scores or the profiles to success or degree of achievement, but the suggestion was made that the profiles might indicate areas of pressure or maladjustment.

### Inclusion of the Rotter in the Test Battery

After an extensive review, Goldberg (1965) concluded that the sentence completion is a valuable instrument in the assessment of personality. He indicated that the problems posed by this method as well as the success it has demonstrated should both require and encourage additional research. In this regard he encourages research involving possible extension of already available sentence completion forms so that existing research literature could be better integrated, better used, and better understood.

Although the Rotter ISB sentence completion form has demonstrated validity in other areas, it has not yet been evaluated systematically for use in nursing education. Accordingly, it appeared worthwhile to include the ISB in the experimental test battery. At the same time, the use of an established instrument of this sort would allow the results of this research to be more easily related to other studies and to psychological knowledge generally.

In the Phase I research (Thurston and Brunclik, 1965) no significant differences in ISB performance were found among the achievement levels. Some differences between schools were noted, however.

This chapter will deal with the study of the relationship of the ISB to achievement in nursing education in Phases I and II. In all cases, the Rotter ISB's were scored in accordance with the manual published by Rotter and Rafferty (1950). In no instance was the achievement status of the applicant or student known to the scorer. Other relevant aspects of the procedure, such as the test battery, the method of administration, the timetable of testing and evaluation, have been detailed in Chapter 2.

## Results

The mean Rotter ISB performances are shown in Table 4.1 with the differences between the achievement levels in Table 4.2. The analysis of variance of this data (Scheffe', 1960) revealed an F of .72 for achievement level which was not significant (Table 4.3). The F of 4.27 for 2 and 436 df for schools indicated that the among-school differences were significant at the .05 level. Between school analyses revealed that the differences between Luther and the other two schools approached significance at the .05 level.

## Discussion

### The Rotter ISB as a Screening Device

There was little evidence that pre-admission ISB performance scored in accordance with the Rotter manual was related to student performance in nursing school. While the unsupervised nature of the ISB administration may have obscured some evidence of such validity, this seems unlikely to account for the general failure to discriminate among achievement levels. For the time being it would appear that use of the ISB for screening purposes would require a professional psychologist who was prepared to justify its validity in this regard.

### The Rotter ISB an an Informational Device

In reading over the individual Rotter ISB records, the researchers have been impressed consistently by the number of hypotheses regarding a student's personality which are suggested by her responses to this form. Faculty members might find this to be an important source for obtaining information regarding the personality of the prospective student. This information could provide a preliminary basis for interviews and counseling sessions. These tentative formulations could give direction to a counselor in exploring areas of potential difficulty or concern of her students. As long as the faculty member maintained a very cautious attitude regarding the validity of her judgments deriving from the ISB, she might find this device helpful. It must be understood clearly that the hypotheses generated in this fashion would have to be evaluated thoroughly, and affirmed or denied in light of additional evidence.

### Inter-School Differences in Rotter ISB Performance

Inter-school difference in ISB performance was substantial and of considerable interest. The findings are particularly intriguing in that they resist easy explanation or interpretation. In Phase I, Holy Family mean scores very closely approximated the mean scores reported by Rotter as being obtained from a non-selected group of entering female Ohio State University freshmen (Thurston and Brunclik, 1965). The mean score of Luther was significantly below this. In an analysis of another aspect of that phase of the research (Thurston, Brunclik, and Finn, 1961), Luther's scores were significantly below those from Holy Family and St. Mary Hospital School of Nursing, Wausau, Wisconsin. Again the scores obtained at these schools were similar to those obtained at Ohio State University. In short, it appeared that the inter-school difference could not be attributed simply to higher scores at St. Mary's and Holy Family. The inter-school differences appeared to result from the consistently lower scores obtained from Luther applicants and students. This could have been accepted at face value as indicating that Luther attracted students who were unusually well-adjusted. Attractive as this explanation might have been, there was little supportive evidence for this notion in the MMPI findings nor in the personal and professional experience of Luther faculty with these students. Other hypotheses entertained at that time included those involving differential test-taking attitudes and the effects of different religious beliefs.

Now in view of the Phase II findings it appears that such attempts at theorizing may have been somewhat premature and/or overly-simplified. For while the Phase II results continue to suggest inter-school differences, Luther student ISB scores were now higher than either Holy Family or Madison General although the differences fail to achieve statistical significance. Although the inter-scorer reliability of the ISB has been demonstrated in this research (Thurston and Brunclik, 1965), the possibility of these results reflecting inter-scorer differences was investigated nevertheless. In other words, if one scorer scored these records consistently lower than another scorer and just happened to score one school at one time and a different school at another time, this could produce results similar to those reported here. An analysis of the scorings, however, has ruled this out as a possible contributing factor.

The results continue to pose problems of interpretation. It becomes increasingly tempting to conclude that the results from these schools may represent chance variation about a common mean.

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Table 4. 1

MEAN PRE-ADMISSION ROTTER ISB SCORES BY ACHIEVEMENT STATUS AND NURSING SCHOOL AFFILIATION FOR 445 SECOND YEAR NURSING STUDENTS

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 126.00<br>S.D. =12.03 | N = 17<br>M = 127.24<br>S.D. =10.91 | N = 43<br>M = 125.37<br>S.D. =12.53 | N = 110<br>M = 125.95<br>S.D. =11.98 |
| Holy Family Hospital | N = 56<br>M = 118.98<br>S.D. =13.09 | N = 17<br>M = 118.94<br>S.D. =13.24 | N = 15<br>M = 125.07<br>S.D. =13.42 | N = 88<br>M = 120.01<br>S.D. =13.23 |
| Madison General Hospital | N = 113<br>M = 121.26<br>S.D. =14.02 | N = 45<br>M = 123.93<br>S.D. =14.19 | N = 89<br>M = 121.87<br>S.D. =14.17 | N = 247<br>M = 121.96<br>S.D. =14.08 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 121.76<br>S.D. =13.53 | N = 79<br>M = 123.57<br>S.D. =13.48 | N = 147<br>M = 123.22<br>S.D. =13.65 | N = 445<br>M = 120.31<br>S.D. =13.40 |

### Table 4. 2

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND NURSING SCHOOLS ON PRE-ADMISSION ROTTER ISB

| Groups | Means | Difference |
|---|---|---|
| Achievement Status | | |
| Achiever - Underachiever | 121.76 - 123.57 | -1.81 |
| Achiever - Failure | 121.76 - 123.22 | -1.46 |
| Underachiever - Failure | 123.57 - 123.22 | + .35 |
| School of Nursing | | |
| Luther - Holy Family | 125.95 - 120.01 | +5.94 |
| Luther - Madison General | 125.95 - 121.96 | +3.99 |
| Holy Family - Madison General | 120.01 - 121.96 | -1.95 |

Table 4. 3

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION ROTTER ISB SCORES

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 2 | 1,546.68 | 773.34 | 4.27** |
| Achievement Status | 2 | 258.80 | 129.40 | .72 |
| Achievement Status x Nursing School | 4 | 531.74 | 132.96 | .73 |
| Within Cell | 436 | 78,900.81 | 180.97 | |
| Total | 444 | 81,238.03 | | |

** Significant at .05 level

## Chapter 5

## The Luther Hospital Sentence Completions (LHSC)*

### Development of the Luther Hospital Sentence Completions

In the development of the Luther Hospital Sentence Completions (LHSC), the researchers relied heavily upon the many studies involving incomplete sentence technique (See Chapter 4). During the initial stages of formulating the LHSC, over 400 sentence stems were assembled by the authors. These incomplete sentences were selected to reflect attitudes considered to be important by authorities in the field of nursing. Most of the stems were suggested by professional nurses on the faculty of the Luther Hospital School of Nursing and on the staff of Luther Hospital. Other items were based upon the suggestions of the Director of the research, a clinical psychologist, and a review of the professional literature relating to psychology and nursing education. From this list, 150 stems were selected on the basis of their relevance, clarity, and potentiality for yielding rich response. As a first test of their usefulness, the stems were administered to the students already enrolled in the Luther Hospital School of Nursing. On the basis of this pretesting, it was found that some stems yielded only meager or stereotyped responses. These stems were eliminated from the final edition of the LHSC, which contains 90 incomplete sentences.

The LHSC was designed to be of a length sufficient to provide relevant and reliable information and at the same time short enough to be answered by the prospective student nurse in a single testing session. A number of items which were retained were rephrased and several new ones were added in order to represent an optimal distribution of items within seven attitudinal areas. The Luther Hospital Sentence Completions (LHSC) with instructions is as follows:

### LUTHER HOSPITAL SENTENCE COMPLETIONS

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Thurston-Brunclik-Finn

Name: ________________________________ Date: ______________

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*The development of this sentence completion form has been detailed in Thurston, J. R., Finn, P. A., and Brunclik, H. L., "A Method for Evaluating the Attitudes of Student Nurses", Journal of Nursing Education, May-June, 1963, Vol. 1, No. 2, pp. 3-7, 23-26.

Below are a number of incomplete sentences. By completing these sentences you can express how you feel about many things. Try to do every one. Feel free to write whatever you wish.

1. When I go to nursing school, my family
2. In high school, I was happiest when
3. At home, I
4. I get embarrassed if
5. Rules and regulations
6. When with friends, I
7. Teachers
8. I feel sad if
9. When on a date, I
10. I like to help when
11. Student nurses usually
12. I'm different from other girls in that
13. My family
14. My earliest memory
15. When someone tells me to do something
16. When with strangers, I
17. Supervised study periods
18. I pray
19. When on a date, boys
20. Ten years from now, I
21. Most people think that a nurse
22. Other people think of me as
23. My father thinks that I
24. I feel disgusted with myself when
25. When asked to take charge, I
26. The trouble with other people
27. English
28. If I could change
29. Necking
30. If things go wrong
31. When I think of myself as a nurse, I
32. If people dislike me
33. My mother thinks that I
34. I hope I never
35. When they ask for volunteers
36. I hope that my roommate
37. Biology
38. My biggest fault
39. I plan to marry when
40. A sentence completion form like this
41. If not admitted to nursing, I'll

42. I would be better if
43. Whenever I think of my father, I
44. When irritated, I
45. In making a decision, I
46. Other girls my age
47. Poor grades
48. I wish
49. "Going steady" is
50. When I need money
51. When a girl doesn't finish nurses training
52. My daydreams are
53. Whenever I think of my mother, I
54. I have most confidence in
55. When criticized, I
56. What bothers me about some girls
57. My most disappointing experience in high school
58. When I menstruate
59. When a man marries a nurse
60. Completing a form like this
61. To prepare myself for nursing, I
62. I like
63. I get angry when my father
64. I worry
65. A baby-sitter should
66. Other people dislike
67. When attending Nursing School, I expect to
68. My greatest asset
69. The one I'll miss the most
70. In our community, my family
71. Bathing someone is
72. I don't like
73. I get angry when my mother
74. When I'm alone
75. Committee work
76. The most important person
77. In school, I
78. Someday, I
79. What bothers me about some boys
80. When I think of leaving home, I
81. After I graduate from nursing school, I'd like
82. I get a funny feeling in my stomach when
83. When parents quarrel
84. When afraid, I
85. Mistakes
86. When people visit me unexpectedly

87. In high school my assignments
88. My appearance
89. Older people
90. The first time away from home, I

## Attitudinal Areas

The 90 sentence stems of the Luther Hospital Sentence Completions are arranged in a sequence to facilitate the examination of responses with respect to each of the seven attitudinal areas. For example, all stems numbered with digit ending in "1" (1, 11, 21, 31, 41, 51, 61, 71, and 81) are incomplete sentences dealing with the respondent's attitude toward nursing (Area 1). These stems are designated to evoke responses suggesting the student's reaction to the duties, obligations, and rewards of nursing.

Sentence stems dealing with the respondent's attitudes toward and regarding self (Area 2), are identified by numbers ending in 2, 4, or 8: 2, 12, 22, 32, 42, 52, 62, 72, 82, 4, 14, 24, 34, 44, 54, 64, 74, 84, 8, 18, 28, 38, 48, 58, 68, 78, and 88. These pertain to the student's reaction to herself, and they include incomplete sentences that allow the student to reveal her self-concept and her personal reactions in a variety of situations.

Attitude toward home and family (Area 3) is assessed by stems 3, 13, 23, 33, 43, 53, 63, 73, 83, 70, 80, and 90 and are designed to elicit the student's attitude toward her home and family.

Attitude toward responsibility (Area 4) is assessed by stems 5, 15, 25, 35, 45, 55, 65, 75, 85, 10, 20, 30, 40, 50, and 60 and are intended to elicit completions describing the attitude of the student toward responsibility, a prime requirement in most nursing situations.

Attitude toward others (Area 5) is assessed by stems 6, 16, 26, 36, 46, 56, 66, 76, 86, 69, 79, and 89 and are designed to provide information about the way in which the student looks at other people. Of particular interest here are completions dealing with important social interactions, peer relationships, and perception of other people.

Attitude toward classwork and studies (Area 6) is assessed by stems 7, 17, 27, 37, 47, 57, 67, 77, and 87 and deal with the respondent's attitude toward academic classwork and studies.

Attitude toward love and marriage (Area 7) is assessed by stems 9, 19, 29, 39, 49, and 59 and are related to the student's reactions to sex, romance, and marriage. Areas 5 and 7 have been combined to form the Others-Love-Marriage area in the NES-LHSC analysis which is reported later in this chapter.

## Hypotheses Suggested by LHSC Responses

To get an idea of the variety of the LHSC responses, the following completions to "Nurses ....." of ten students selected at random may be examined:

1. ... are essential to every country and generally well liked by everyone.
2. ... are stereotyped. I knew a nurse and she was crabby. (Or) I knew a nurse and she was the most wonderful lady.
3. ... must be on their toes all the time.
4. ... wear white uniforms, white stockings and shoes, and are very professional.
5. ... never need to worry that they won't have a job.
6. ... should be in the hospital sick sometimes just to see what it's like.
7. ... are God's gift to patients.
8. ... are people too. I wish some people would remember that.
9. ... always think of people as individuals and try to help them.
10. ... are looked upon always as people who are very mature and smart.

Each of these statements indicates an attitude that the respondent holds toward the profession which she is interested in entering. The individual differences in the responses are striking. Completion 1 stresses the importance of nurses and hints at the feeling of being needed and liked. Completion 2 suggests that this prospective student is probably unhappy with the "stereotyping" she refers to, that she wishes to be regarded as an individual, and that being a nurse would cause reactions to her that are not necessarily appropriate nor justifiable. Completion 3 stresses the pressure the student may anticipate in being required to live up to the high standards of professional conduct. Completion 4 suggests an almost sterile aloofness as the student's concept of the nurse's role, indicating perhaps that active interpersonal contacts with patients might not be an area of interest or reward to her. Completion 5 stresses the security that a registered nurse has in terms of employment. Completions 7 and 9 indicate that the prospective students are emphasizing the benefits that patients derive from understanding and efficient nurses. Completion 6 discloses that the respondent may not share this point of view and hints that nurses do not universally have these characteristics and could profit from a realistic look at their work. Completion 8 suggests the belief that nurses are imposed upon to an unnecessary degree. Completion 10 indicates the pride and prestige the respondent associates with professional nursing.

These interpretations of the completions of a single sentence stem gives some indication of the potential utility of the sentence completion method. It is possible for the faculty member to obtain ideas and form hypotheses from a single response. The initial impressions may then be verified or reinterpreted in the light of responses to additional sentences. The possibilities inherent in the responses to 90 sentence stems dealing with a prospective student's attitudes and emotional reactions are quite impressive.

## Analysis and Interpretation

After the student completes each sentence on the form, the responses may be read and interpreted in a variety of ways. As examples, the responses of a student may be brought together in different forms of a psychological reports similar to the two which are to follow. The report of Student A's LHSC performance includes complete interpretation and discussion while that of Student B is confined to a categorized account of her statements.

## STUDENT A

## LUTHER HOSPITAL SENTENCE COMPLETIONS REPORT

This evaluation is based upon prospective Student A's completions of the sentence stems in the LHSC test (the words in quotation marks are the student's responses). The comments are based upon her actual statements as well as upon an interpretation of the deeper meaning of the responses. The evaluation was made without any other knowledge of this girl.

The reader is urged to exercise considerable caution and discretion in the use of these results. It is felt that this report can be most useful in opening up for exploration areas involving personality and problems that would not ordinarily be noted on the basis of the usual psychological testing or initial contacts with the student. If the counselor is aware of the possibility of certain specific problems or problem areas, then she is in the position of being able to do something to prevent the occurrence of troubles or to alleviate the difficulties if they have already arisen.

Attitude toward Home and Family. It would seem that this girl's relationships within the family are of a rather distant and formal nature. While she says that the members of her family "on a whole are very close," to most of the sentence stems dealing with parents she fails to respond with either positive or negative feelings. This might indicate either an absence of feeling for them or may serve as a cover for areas of difficulty. The latter seems most likely, for this girl says that she gets angry when her father "interrupts me when I'm talking." Portions of her responses indicate that she and her parents should go their separate ways. She does admit to a feeling of concern for her father, however, stating that she prays "that God will keep watch over my father and not let him suffer so much."

Attitude toward and regarding self. This girl probably regards herself as being attractive. There is a suggestion of snobbishness about her; she indicates that she is different from other girls in liking abstract painting. She is not too sure of what other people think of her. If people dislike her, she tends to stay away from them. She indicates that she would be better if she could hear more effectively. A hearing deficit could have a profound effect upon her educational and personal adjustment. She becomes embarrassed when she is teased. She has confidence in her father, but she worries about what "will happen to my father." She regards herself as a religious person. She feels that being a soft-spoken person is her biggest fault. She states that her greatest asset is her interest in other people; but there may be some doubt about that. She says that some day she "would like to make a trip to Massachusetts and see a sister whom I have never seen." This is a further indication of a somewhat unusual family situation.

Attitude toward Others. She indicates that she gets along fairly well with others and that meeting strangers is not a particular source of difficulty for her. The trouble with other people "is that they don't mind their own business." She does not like people who are loud or noisy. She is bothered by the fact that girls she knows "are so boy crazy." She refers to her father as the most important person in her life.

Attitude toward Love and Marriage. In her relationships with boys, she tends to rely upon her appearance in her efforts to get along with them. She states that boys are usually very considerate of her when on a date. Necking, "is for those who can't find anything better to do." She is ambivalent in her feelings about "going steady." Marriage is within her plans, but not in the near future. There are few indications of strong attachments to boys at this time.

Attitude toward Academic Areas. Teachers "are always ready to help you, but you must ask them for this help." There may be some reluctance on her part to do this. Supervised study periods "are for those students who are not reliable and are trouble makers." She disliked Biology and likes English. She becomes "disgusted" when she gets poor grades. Her most disappointing experience in high school was "when I didn't make the choral group." She says that she enjoys extracurricular activities. Her assignments are said to be neat and done on time.

Attitude toward Responsibility. There are indications that she conforms rather easily to the rules and regulations that are imposed on her. She accepts responsibilities and attempts to carry them out to the best of her ability. She likes to be asked to help out. She is quite sensitive to criticism, but tries to do something constructive about whatever is causing the difficulty. Committee work "takes a lot of responsibility and leadership." Mistakes "are often made but they should not occur more than once." She likes to help "when someone is ill." Completing the LHSC was difficult for her.

Attitude toward Nursing as a Profession. Her family "will be happy" if she goes to nursing school. She feels that she will be proud to become a nurse. If not admitted to nursing, she says that she will have to find a job. When a girl does not graduate from nurse's school "it is because she really didn't try hard enough to make a go of it." She has taken academic course work specifically for preparation toward becoming a nurse. Giving a patient a bath is "something I'll probably have to do if I become a nurse." If nothing else, this would indicate a lack of enthusiasm toward this aspect of nursing care. She says that she would like to become an Army nurse upon graduation.

## SUMMARY

This prospective student appears to be a girl who has some problems now and who could have even greater ones in the near future. Two points on the record appear to stand out in this respect. First and foremost is her hearing difficulty with all its potential for causing problems. Second, there is the family situation. She indicates strong ties with her father. She also mentions strong fears and worries concerning his welfare. The exact nature of the difficulty involving the father is not specified in the record, but it is something that presumably could be explored with this girl. It is of considerable significance that any allusion to the mother is absent from this record. It might be profitable to investigate these home circumstances. Taken together, the hearing loss and the home situation could cause her considerable difficulty in her dealings with others. This is not to say that she does not try to relate to other people, but rather than these relationships are not as effective nor as rewarding as they could be. At this time, she probably would be more content to withdraw from her problems, but it seems that she has the potentialities to cope with them if she is given assistance by an understanding and supportive counselor. She could undergo a period of acute disturbance if something happens to her father.

## DISCUSSION

It should be re-emphasized that this psychological evaluation was done as part of the research project to validate the LHSC technique. Later, examination of Student A's performance record disclosed that her hearing difficulty caused her much trouble in the school of nursing before it was finally known. In contrast to the forthright admission of this disability on the LHSC, she made every effort at concealment in classes or in ward activities. Her psychological reaction to a hearing aid after it was made available was such as to reduce its efficiency markedly. Her family did constitute a source of difficulty and worry for her, having a markedly disruptive effect upon her performance in the school of nursing. By the time these twin sources of difficulty had been noted by the faculty, poor adjustment and performance patterns had been established which were highly resistant to change. No evidence of either difficulty had been noted on the usual application material. She withdrew from school shortly before she was to be asked to leave.

The point that should be stressed is that if the faculty members could have been alerted to the potential sources of difficulty before the girl entered school, they could have been more helpful. They might have taken the steps necessary to eliminate or at least minimize the impact of these crucial handicaps at a time early enough in the girl's education when maximum benefits might be expected.

## STUDENT B

## LUTHER HOSPITAL SENTENCE COMPLETIONS REPORT

### Attitude toward Nursing as a Profession

When I go to a school of nursing, my family "is nearby. Many say that you get depressed and want to quit more than once. This way I will get reassurance when most needed."

Student nurses usually "make me drool. I really envy them."

Most people think that a nurse "uniform and cap are romantic and exciting. I'm going into it to help people."

When I think of myself as a nurse, I "think of the responsibility I will have toward people."

If not admitted to nursing, I'll "not know what to do. It's all I want!!! That fact I'm sure of."

When a girl doesn't finish nurses training "it is just plain stupid. Look what it offers!"

To prepare myself for nursing, I "took scientific courses in school. I have thought it over for over six years and this is for me."

Bathing someone is "something you should do for them. They have many discomforts and you should make them more comfortable."

After I graduate from nursing school, "I'd like to go into surgery."

### Attitude toward and regarding self.

In high school, I was happiest when "I could do well. I wouldn't compete for clothes, but oh how I liked to get A's."

I'm different from other girls in that "I feel inferior. I sometimes feel that I don't have a chance but I always come out o.k."

Other people think of me as "a person they can trust. I never intend to be two-faced or betray their respect."

When they ask for volunteers "--I volunteer."

In making a decision, "I look at both sides, weigh the facts, and then decide."

When criticized, I "take it to heart and try and improve."

A babysitter should "be aware of the responsibility given her."

Committee work "should be done equally with all people concerned doing their work."

Mistakes "can be corrected."

I like to help when "I feel I am needed; the more the better."

Ten years from now, I "hope that I am married and have children. I love them."

If things go wrong, I "take my problems to God. A person needs someone and I have Him."

A sentence completion form like this "makes my hand, neck, and mind tired but I can see its purpose."

When I need money, "I decide if I really need it. Then if really, really important, Mom said to always come to her."

Completing a form like this "is fun and profitable."

### Attitude toward Others

When with friends, I "try to give in to their wishes. I am trying to build my character so that I can given and take equally and miss later heartbreak."

When with strangers, I "am at ease."

The trouble with other people "is no concern of mine. People should improve on themselves before starting on others."

I hope that my roommate "is nutty, fun-loving, and talkative like me. She will have to have a good sense of humor."

Other girls my age "are not quite as crazy as me."

What bothers me about some girls "I'd rather not criticize them."

Other people dislike "classical music, but I love it."

The most important persons "in the world are God and my parents."

When people visit me unexpectedly "I never mind. There is always room for more."

The one I'll miss the most "is no one. They all live in Eau Claire."

What bothers me about some boys "they are messy and don't respect anyone."

Older people "are respected by me. They have something I don't -- experience and should be listened to with respect.

## Attitude toward Classwork and Studies

Teachers "like me and I like every one of them. I respect them very much and truly believe they respect me."

Supervised study periods "are o.k., I guess. I believe that a person should apply himself so that he doesn't need supervision.

English "comes easily to me in school."

Biology "was a favorite subject of mine. I loved to dissect things."

Poor grades "I have never had and never want."

My most disappointing experience in high school "was my love life. I am still stuck on him."

When attending Nursing School, I expect to "keep the majority of my things at home, but most of all I expect to succeed."

In school, I "always do well."

In high school my assignments "always are in on time."

## Attitude regarding Love and Marriage

When on a date I "like to carry on a conversation on an equal footing with the boy. I want him to respect me and know that it is a give and take relationship."

When on a date boys "should take the lead. I want my man to be the boss."

Necking "I approve of. People don't always run away from things. I didn't."

I plan to marry when "I am asked by the right person who is fun-loving, and respects me."

Going steady is "perfect with me but getting too serious leads to heartbreak -- I know."

When a man marries a nurse "he is getting a bargain. Think of the background she will have for motherhood, etc."

## Qualitative Use of LHSC

It should be pointed out at the very outset that the researchers believe in the absolute necessity of adopting an enlightened, cautious approach to the use of all psychological tests, forms, or inventories. Stress should be placed upon the assertion that psychological data does not, in itself, tell what is wrong or right with an individual, or what should be done for or with her. Criticisms of the field of psychological testing (Gross, 1962 and Hoffman, 1962) often carry the implication that the treatment, selection, placement, or promotion of an individual is totally dependent upon test results. It is even suggested in these writings that some people believe that the test will tell all that is necessary to know. In contrast, it should be emphasized that test data should always be viewed as adjunct or supplementary information. The test findings should be set against background information of the individual. Both should be supplemented with observations of current behavior of the individual under study. Then it is possible to formulate tentative hypotheses concerning the student's behavior and out of this evolve a plan for constructive action. The hypotheses and the plans are products of decision-making processes by one or more people. The effectiveness of planning is therefore to a large extent dependent upon the wisdom and psychological sophistication of the individuals making the plans. Human beings, not tests, make these decisions. If this statement and all of its ramifications are clearly understood, then psychological tests may make their maximum contribution. All of this imposes considerable responsibility upon the person using the materials. It is imperative that the counselor exercise extreme caution in his hypothesizing and interpreting. It is the position of the researchers that information obtained in the fashion of this study should never be used as a primary basis for any decisions regarding admission or retention of an individual in a nursing school program. The data should be used to identify or highlight areas of potential difficulty or strength so that these may be counteracted or emphasized in counseling and helping the student. In keeping with these considerations, the tests developed in this research are made available only to faculty members of nursing schools or to researchers in this field. It is assumed that they will allow these tests to be used only in a proper and professional manner.

It is suggested further that there be no fixed, absolute rules for the analysis and interpretation of the Luther Hospital Sentence Completions (LHSC).

A flexible approach is recommended. The completions can generally be accepted at their face value. At times, however, a student may react defensively and offer only evasive, stereotyped, or ingratiating responses. These efforts to hide her real reactions or attitudes do not make a record useless. Guarded answers are often characteristic of a distrustful person who is afraid to show how she really feels. Advance knowledge regarding prospective students of this sort might be quite helpful to the faculty of a school of nursing.

Simple inspection of the LHSC ordinarily reveals much useful information regarding the attitudes and emotional reactions of a student or a prospective student. The results should be helpful and informative to members of nursing school faculties who read and abide by this manual. The more thoroughly trained and experienced the interpreter becomes, however, the greater the yield of knowledge about the individual.

The completions to the LHSC can provide the faculty member with general information that she might not be able to acquire easily in any other way. Indications of personal likes, dislikes, fears, strengths, weaknesses and needs, are called forth from each applicant in a systematic fashion. To the faculty member, this might have value in planning lessons, individual classroom assignments, and student-counselor conferences. It could allow her to become alert to many factors of potential import to a student in a nursing school.

If the faculty member has neither the time nor the inclination to use the LHSC for general information on all her counselees, it might be worthwhile to have it administered in order to have this information for use at some later date when the faculty member might be confronted with a specific problem that she would like to understand better.

If the problem of the student clearly exceeds the resources of the counselor, she might be referred to a psychologist or psychiatrist for psychological evaluation and recommendation. Here, too, the LHSC could provide a psychological point of reference by which to measure personality changes over a period of time. In this regard, and by themselves, this data could constitute a basis for the development of insights and deeper interpretations by these trained specialists.

## Nursing Education Scale (NES)-LHSC

The development of a method of quantifying LHSC responses, the Nursing Education Scale (NES), constituted a major undertaking of Phase I of this research. The NES has been included as Appendix A of this report. Its development has been detailed elsewhere (Thurston and Brunclik, 1965a; and Thurston and Brunclik, 1965b), and summarized in this report (Chapters 2 and 8). Scoring reliability, inter-test reliability, and cross-validation for NES-LHSC in terms of student achievement were evaluated. The remainder of this chapter is devoted to these considerations as they pertained to NES scoring of the LHSC.

## Inter-scorer reliability (NES-LHSC)

Fifty LHSC records were selected at random at Luther and Holy Family so as to provide a basis for assessing the extent of inter-scorer agreement in applying the NES to Luther Hospital Sentence Completions. These fifty LHSC's were scored by a psychologist (A), a nurse (B), with considerable experience in scoring sentence completion forms, two nurses (C and D) with no experience in such scoring, a social worker (E) with some experience in sentence completion scoring, and a student (F-1) majoring in psychology who had no previous experience in scoring sentence completion responses. This student also rescored the fifty LHSC's (F-2). Table 5.1 indicates the inter-correlations of the NES Total Scores obtained in these seven scorings. The correlations ranged from .67 to .85. Evidence of high agreement between scorers was noted, with the highest agreements between B and A, E, F-1, F-2, C. Rescoring by the same individual (F-1, F-2) also yielded a high correlation. Of the scorers, D, a nurse, was in least agreement with the others. These findings suggest that experience in scoring sentence completions and formal training in psychology are related to scoring reliability.

An estimate of scorer reliability was obtained through an analysis of variance using this formula (Winer, 1962, p. 128):

$$r = \frac{1 - \text{MSw scorer}}{\text{MS between scorer}}$$

The within student mean square for students is obtained by adding the between scorers and residual sums of squares and dividing by the combined degrees of freedom for the between scorers and residual terms (Table 5.2). The estimate of the average of the seven scorings made on each of the LHSC records is shown to be r = .95. In other words, if the scorings were to be repeated with comparable scorers but with the same LHSC records, the correlation between the mean ratings obtained from the two sets of data would be approximately .92. This interpretation assumes that the variance due to differences between the scorings by the scorers is part of the error of measurement and does not represent a systematic source of variation. In short, the results indicate that the NES can be applied to LHSC with the expectation of consistent scorings.

## Test-Retest Reliability

LHSC's were administered routinely to applicants during spring, 1964, at Luther, Holy Family and Madison General. In order to assess the stability of LHSC performance as scored with the NES, LHSC's were re-administered in the fall, 1964 to students who had been admitted. All tests were scored by the psychologist using the NES. Two LHSC testings were available for 104 students. Correlations were then computed using these two sets of records for the NES Area and Total scores. The results of these computations are given in Table 5. 3. All correlations are significant at beyond the . 01 level (df = 103) with the correlation of . 51 between the two NES Total scorings being the highest.

## Cross-validation of Nursing Education Scale - LHSC

Considerable deliberation was undertaken regarding the more effective of two ways of presenting the results of the cross-validation of the NES-LHSC involving the three schools. The approach combining the results for all three schools had an advantage in that this was the same approach that had been used in evaluating the results of the MMPI and Rotter ISB segments of this investigation (Chapters 3 and 4). The second method would involve the treatment of data from Luther and Holy Family together and that from Madison General by itself. This method would permit a cross-validation on student performance at the same nursing schools that had participated in the original derivation and later modification of the NES-LHSC. In addition, this approach would allow a cross-validation based on a large number of students from a nursing school not directly involved in NES-LHSC development. Both analyses were completed. The latter approach was selected as the primary basis for this report for the reasons indicated although the three school analysis will be used when appropriate to evaluate inter-school differences.

The results of this portion of the study as analyzed by analysis of variance (Scheffe', 1960) are presented in Tables 5.4 - 5.31.

The mean Nursing NES-LHSC-Area Scores are shown in Table 5. 4 with the differences between the achievement level and school means shown in Table 5. 5. The analysis of variance of the data from Luther-Holy Family (Table 5. 6) and Madison General (Table 5. 7) failed to reveal statistically significant F ratios for achievement status or schools.

In Tables 5. 8 and 5. 9 the mean Self NES-LHSC-Area Scores and the differences between the various achievement and school groupings are given. The analysis of variance for Luther-Holy Family data (Table 5. 10) produced an F of 3. 25 among achievement status groups which is significant at the . 05 level with 2 and 192 df. However, further inter-achievement group comparisons failed to reveal statistically significant differences. Table 5. 11 presents the results of the analysis of Madison General data. No significant differences among achievement groupings. No between schools differences were found.

The mean Home-Family NES-LHSC-Area Scores are reported in Table 5. 12. The differences among the achievement status and schools are reported in Table 5. 13. The analysis of variance of the Luther-Holy Family findings (Table 5. 14) shows an F of 8. 09 for achievement status which is significant at the . 05 level for 2 and 192 df. Further inter-achievement group analysis revealed significant (. 05 level or greater) differences between Achiever vs. Failure and between Underachiever vs. Failure groupings at these two schools. The analysis of variance of the Madison General data

(Table 5.15) revealed a significant F of 4.54 for achievement status (.05 level with 2 and 244 df) but further analysis of inter-achievement group differences failed to produce statistically significant findings. Again no significant inter-school differences were noted.

The means of the Responsibility NES-LHSC-Area Scores and the differences between the several achievement and school groupings are given in Tables 5.16 and 5.17. The analysis of variance reported in Table 5.18 shows an F of 10.15 among achievement levels status groups at Luther-Holy Family which is significant at the .01 level for 2 and 192 df. Inter-group analysis showed the Achiever vs. Failure difference to be significant at the .01 level. No such differences were noted for Madison General (Table 5.19) nor were there any significant inter-school differences.

The mean Others-Love-Marriage NES-LHSC-Area Scores are found in Table 5.20 with the differences among the achievement and school groupings in Table 5.21. The analysis of variance (Table 5.22) of the Luther-Holy Family results produced an F of 3.00 for achievement status which is very nearly significant at the .05 level for 2 and 192 df. No differences were shown for Madison General (Table 5.23) nor were there any significant inter-school differences.

The mean Academic NES-LHSC-Area Scores and the differences among the various achievement and school groupings are given in Tables 5.24 and 5.25. The analysis of variance for the Luther-Holy Family data (Table 5.26) indicated an F of 8.33 for achievement status which is significant at the .01 level for 2 and 192 df. Inter-achievement group comparisons revealed a significant difference between the Achiever and Failure groups (.01 level). No significant findings were reported for Madison General (Table 5.27) nor were there any significant inter-school differences.

The mean Total NES-LHSC scores are reported in Table 5.28 and the differences among the achievement status and school grouping in Table 5.29. The analysis of variance for Luther-Holy Family data (Table 5.29) showed an F of 20.76 for achievement status which is significant at the .01 level with 2 and 192 df. Inter-achievement group comparisons revealed significant (.01 level) differences for both the Achiever vs. Failure, and the Underachiever vs. Failure comparisons. Table 5.31 also showed a significant differentiation (.05 level) for achievement status groupings at Madison General. Inter-achievement group analysis revealed significant differentiations (.05 level) between Achievers vs Failures, and Underachievers vs. Failures. There were no significant inter-school differences.

The results of the Total NES-LHSC score cross-validation are presented in a different fashion in Table 5.32. To serve as a point of reference, it is noted that the Failure rates at Luther, Holy Family, and Madison General were 39 %, 17 %, and 36 % respectively. Of those who were accorded NES-LHSC scores of 80 or more, the Failure rates at these three schools were 81 %, 50 %, and 55 %. Conversely, of those applicants who were given NES-LHSC scores of 70 and below, the Failure rates were 9 %, 0 %, and 34 % respectively at the three schools.

In the course of this investigation norms were established in percentile form for the NES-LHSC Total and Area Scores. These norms are given in Appendix C-1.They are based upon the 445 LHSC records used in the previously described cross-validation.

## Discussion

A very important requisite of any psychological test is scoring reliability, i. e. the consistency of scoring by different scorers or between scorings by the same scorer at different times. On the basis of results reported in this chapter, it would appear that inter-scorer reliability has been demonstrated for NES scoring of the LHSC. It should not be assumed from these findings however, that reliable scoring is guaranteed for any scorer. The degree of reliability appears influenced by formal psychological training as well as experience in scoring sentence completions. Results reported in this chapter as well as in Chapter 6 emphasize the need for trial scoring runs and rigid adherence to the scoring standards. The scoring examples of Appendix B have been included for the purpose of providing some scoring experience and at the same time allowing the beginner to compare his scoring with an established standard.

Test-retest reliability involves a matter that must be interpreted in relation to conflicting conceptions of personality stability. For example, some psychologists argue that if an individual's personality is dynamic and ever-changing it is unrealistic to expect high agreement between measures describing it if they are taken at different times. Others hold that while the individual is changing constantly, certain elements of that personality should be relatively enduring and the stability should be manifested in comparable performances on a psychological test administered at one time and then at another. The implications of consistencies and inconsistencies in performance have received some discussion in Chapter 9. For the purpose of this chapter, however, it seems safe to conclude that LHSC performance as scored by the NES has substantial elements of stability over approximately a six month period of time.

The matter of cross-validation of the NES scoring of the LHSC is probably the most important single area of the Phase II research. Even a psychologist who believes that the primary purpose of psychological tests is to provide the intuitive springboard for the generation of ideas and hypotheses, would be interested in this basic question: To what extent will this test and its scoring standard demonstrate effectiveness in its intended purpose when utilized with results coming from students different from those whose performance served as the basis for its derivation? Phase I findings are positive in this regard for the NES, Preliminary Form, scoring of the LHSC was found to be related to achievement status in a completely new sample of students at the same schools which participated in NES derivation. Phase II research provided an opportunity to determine if comparable findings would obtain using the NES in its revised form with yet another group of students from Luther and Holy Family Hospital Schools of Nursing and a group of students from Madison General Hospital School of Nursing, a school not involved in the original NES derivation and cross-validation.

In regard to the findings deriving from Luther and Holy Family, the Phase II results are clearly in line with those obtained in Phase I. LHSC performance as scored with the NES was related to achievement status. The NES Total scores of achievers and underachievers were significantly lower than those of failures.

Phase II research also provided an opportunity to investigate the relationship of six attitude areas to achievement status. Statistically significant differences were demonstrated at Luther and Holy Family between achievement groupings on the Self, Home-Family, Responsibility, Others-Love-Marriage, and Academic Area Scores. While in the expected direction, the differences in Nursing area scores did not achieve statistical significance. Differences between specific achievement groupings were more difficult to demonstrate. However, significant differentiations were found between achievers and failures and between underachievers and failures in the Home-Family area. Similar differentiations were noted between achievers and failures in the Responsibility and Academic areas.

While the results from Madison General are generally in the expected direction, there is little evidence of a strong relationship between NES performance and achievement status at this school. Differential NES Total scores were noted in comparing the failures with achievers as well as with underachievers. In considering the attitude areas, only Home-Family scores were related to achievement status. However, this relationship was not significant between specific achievement groups such as the achievers and the failures.

It seems most likely that the Nursing Education Scale emerged as a scoring key that would have maximal validity at the Luther and Holy Family Schools. This may be interpreted as additional evidence supporting the argument for "tailor made" tests and norms for individual schools. Caution should be used if the NES-LHSC scores are employed for operational purposes in either selection or in designating students for special counseling attention. If research facilities and time permit, modifications of NES might allow individual schools to develop norms and scoring standards for their own special operational purposes. It should be stated parenthetically however, that the development of local norms or scoring standards would be greatly facilitated if the NAI research described in Chapter 7 and the application of discriminant function analysis as described in Chapter 10 should yield positive findings.

It is believed that the LHSC has value when used qualitatively to derive impressions of individual students as suggested earlier in this chapter. As of January 1, 1967 over forty schools of nursing were using the LHSC in this manner.

## Research Involving the LHSC

Peitchinis (1967) has used a modified form of the LHSC to conduct research into the psychological needs of nursing students in England. She reports that the Nursing Education Scale, Preliminary Form, scores of nursing students in London schools were higher than those obtained from students in the United States.

Five additional schools joined the Luther Hospital Research Project in 1966. Beginning in fall, 1966, LHSC's have been administered along with NAI, Form II at:

Nebraska Methodist Hospital School of Nursing, Omaha, Nebraska
California Hospital School of Nursing, Los Angeles, California
Bryn Mawr School of Nursing, Bryn Mawr, Pennsylvania
St. Vincent's Hospital School of Nursing, New York, New York
St. Joseph's Hospital School of Nursing, Marshfield, Wisconsin

The validity of the LHSC administered during the first week of school and as scored by the NES will begin to be evaluated in the summer of 1969 when the first group of students at these schools is scheduled for graduation. The annual testing program (1966-67-68) together with a determination of their graduation status after three years (1969-70-71), will provide the basis for ascertaining this test's validity at these several schools when given during the first week of school. Phase I and Phase II research investigated LHSC validity when administered at the time of application to nursing school.

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Table 5.1

INTER-SCORER CORRELATIONS OF NES TOTAL SCORES FROM SEVEN SCORINGS OF 50 LHSC'S[a]

| Scorers[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scorers | A | B | C | D | E | F-1 | F-2 |
| B | .85 | | | | | | |
| C | .72 | .80 | | | | | |
| D | .70 | .71 | .70 | | | | |
| E | .79 | .89 | .73 | .67 | | | |
| F-1 | .79 | .86 | .78 | .77 | .79 | | |
| F-2 | .81 | .80 | .74 | .79 | .75 | .83 | |
| Total Mean NES Scores | 74.98 | 74.46 | 72.44 | 74.32 | 74.42 | 75.06 | 74.88 |
| S.D. | 3.27 | 3.41 | 3.45 | 3.39 | 3.44 | 3.07 | 2.95 |

a all correlations are significant at the .01 level

b See text for experience and professional background of scorers

Table 5.2

ANALYSIS OF VARIANCE AND RELIABILITY ESTIMATE FOR NES-TOTAL SCORES OF 7 SCORERS OF 50 LHSC'S

| Source | df | SS | MS |
|---|---|---|---|
| Between students | 49 | 2972.05 | 60.65 |
| Between scorers | 6 | 242.31 | 40.38 |
| Residual | 294 | 730.83 | 2.49 |
| Total | 349 | 3949.19 | |

Reliability estimate for 7 scorers = .95

Table 5.3

## TEST-RETEST CORRELATIONS OF NES-LHSC TOTAL AND AREA SCORES (N=104)[a]

NES-LHSC SCORINGS
(Retest)

| NES-LHSC Scores | Areas N | Se | H-F | Re | O-L-M | Ac | Total | Test Means | S.D. |
|---|---|---|---|---|---|---|---|---|---|
| Nursing | .33 | | | | | | | 8.99 | 1.06 |
| Self | | .37 | | | | | | 22.27 | 1.42 |
| Home-Family | | | .37 | | | | | 7.78 | .90 |
| Responsibility | | | | .27 | | | | 13.99 | 1.32 |
| Others-Love Marriage | | | | | .43 | | | 11.93 | 1.05 |
| Academic | | | | | | .32 | | 10.27 | 1.04 |
| Total | | | | | | | .51 | 75.23 | 3.39 |
| Retest Means | 9.25 | 22.48 | 7.70 | 14.01 | 11.77 | 10.08 | 75.29 | | |
| S.D. | .99 | 1.40 | .71 | 1.33 | 1.02 | 1.17 | 3.16 | | |

a All significant at the .01 level

Table 5.4

## MEAN NURSING NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 8.78<br>S.D. =1.07 | N = 17<br>M = 9.18<br>S.D. =1.24 | N = 43<br>M = 9.37<br>S.D. = .95 | N = 110<br>M = 9.07<br>S.D. =1.08 |
| Holy Family Hospital | N = 56<br>M = 9.04<br>S.D. =1.06 | N = 17<br>M = 8.82<br>S.D. = .95 | N = 15<br>M = 9.13<br>S.D. = 1.19 | N = 88<br>M = 9.01<br>S.D. =1.06 |
| Madison General Hospital | N = 113<br>M = 8.83<br>S.D. =1.15 | N = 45<br>M = 9.00<br>S.D. = .90 | N = 89<br>M = 9.02<br>S.D. =1.04 | N = 247<br>M = 8.93<br>S.D. =1.07 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 8.87<br>S.D. =1.11 | N = 79<br>M = 9.00<br>S.D. = .99 | N = 147<br>M = 9.14<br>S.D. =1.04 | N = 445<br>M = 8.98<br>S.D. =1.03 |

Table 5.5

DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION NES-LHSC-AREA SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 8.92 - 9.00 | - .08 |
| Achiever - Failure | 8.92 - 9.31 | - .39 |
| Underachiever - Failure | 9.00 - 9.31 | - .31 |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 8.83 - 9.00 | - .17 |
| Achiever - Failure | 8.83 - 9.02 | - .19 |
| Underachiever - Failure | 9.00 - 9.02 | - .02 |
| School of Nursing | | |
| Luther - Holy Family | 9.07 - 9.01 | + .06 |
| Luther - Madison General | 9.07 - 8.93 | + .14 |
| Holy Family - Madison General | 9.01 - 8.93 | + .08 |

Table 5.6

ANALYSIS OF VARIANCE FOR PRE-ADMISSION NURSING NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | .00 | .00 | .00 |
| Achievement Status | 2 | 4.61 | 2.31 | 2.06 |
| Achievement Status x Nursing School | 2 | 3.39 | 1.70 | 1.51 |
| Within Cell | 192 | 215.23 | 1.12 | |
| Total | 197 | 223.23 | | |

Table 5.7

ANALYSIS OF VARIANCE FOR PRE-ADMISSION NURSING NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 2.07 | 1.03 | .90 |
| Within Cell | 244 | 279.76 | 1.15 | |
| Total | 246 | 281.83 | | |

Table 5.8

MEAN SELF NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 21.76<br>S.D. = 1.45 | N = 17<br>M = 22.00<br>S.D. = 1.70 | N = 43<br>M = 22.74<br>S.D. = 1.33 | N = 110<br>M = 22.18<br>S.D. = 1.50 |
| Holy Family Hospital | N = 56<br>M = 22.29<br>S.D. = 1.68 | N = 17<br>M = 22.65<br>S.D. = 1.62 | N = 15<br>M = 22.53<br>S.D. = .83 | N = 88<br>M = 22.40<br>S.D. = 1.55 |
| Madison General Hospital | N = 113<br>M = 22.29<br>S.D. = 1.42 | N = 45<br>M = 22.47<br>S.D. = 1.53 | N = 89<br>M = 22.60<br>S.D. = 1.37 | N = 247<br>M = 22.43<br>S.D. = 1.43 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 22.17<br>S.D. = 1.51 | N = 79<br>M = 22.41<br>S.D. = 1.58 | N = 147<br>M = 22.63<br>S.D. = 1.31 | N = 445<br>M = 22.35<br>S.D. = 1.49 |

Table 5.9

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION SELF NES-LHSC-AREA SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 22.03 - 22.32 | - .29 |
| Achiever - Failure | 22.03 - 22.69 | - .66 |
| Underachiever - Failure | 22.32 - 22.69 | - .37 |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 22.29 - 22.47 | - .18 |
| Achiever - Failure | 22.29 - 22.60 | - .31 |
| Underachiever - Failure | 22.47 - 22.60 | - .13 |
| School of Nursing | | |
| Luther - Holy Family | 22.18 - 22.40 | - .22 |
| Luther - Madison General | 22.18 - 22.43 | - .25 |
| Holy Family - Madison General | 22.40 - 22.43 | - .03 |

Table 5.10

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION SELF NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | 4.97 | 4.97 | 2.22 |
| Achievement Status | 2 | 14.55 | 7.27 | 3.25* |
| Achievement Status x Nursing School | 2 | 5.04 | 2.52 | 1.13 |
| Within Cell | 192 | 430.35 | 2.24 | |
| Total | 197 | 454.91 | | |

* Significant at .05 level

Table 5.11

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION SELF NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 4.65 | 2.32 | 1.14 |
| Within Cell | 244 | 496.00 | 2.03 | |
| Total | 246 | 500.65 | | |

Table 5. 12

MEAN HOME - FAMILY NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 7.46<br>S.D. = .71 | N = 17<br>M = 7.65<br>S.D. = .86 | N = 43<br>M = 8.40<br>S.D. = .98 | N = 110<br>M = 7.85<br>S.D. = .95 |
| Holy Family Hospital | N = 56<br>M = 7.68<br>S.D. = .92 | N = 17<br>M = 7.47<br>S.D. = .87 | N = 15<br>M = 7.87<br>S.D. =1.19 | N = 88<br>M = 7.67<br>S.D. = .96 |
| Madison General Hospital | N = 113<br>M = 7.62<br>S.D. = .82 | N = 45<br>M = 7.96<br>S.D. = .77 | N = 89<br>M = 7.93<br>S.D. = .89 | N = 247<br>M = 7.79<br>S.D. = .85 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 7.60<br>S.D. = .82 | N = 79<br>M = 7.78<br>S.D. = .83 | N = 147<br>M = 8.06<br>S.D. = .97 | N = 445<br>M = 7.77<br>S.D. = .93 |

## Table 5.13

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION HOME - FAMILY NES-LHSC-AREA SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 7.56 - 7.56 | .00 |
| Achiever - Failure | 7.56 - 8.26 | - .70** |
| Underachiever - Failure | 7.56 - 8.26 | - .70* |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 7.62 - 7.96 | - .34 |
| Achiever - Failure | 7.62 - 7.93 | - .31 |
| Underachiever - Failure | 7.96 - 7.93 | + .03 |
| School of Nursing | | |
| Luther - Holy Family | 7.85 - 7.67 | + .18 |
| Luther - Madison General | 7.85 - 7.79 | + .06 |
| Holy Family - Madison General | 7.67 - 7.79 | - .12 |

* Significant at .05 level
** Significant at .01 level

Table 5.14

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION HOME-FAMILY NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | .21 | .21 | .26 |
| Achievement Status | 2 | 13.04 | 6.52 | 8.09** |
| Achievement Status x Nursing School | 2 | 4.58 | 2.29 | 2.84 |
| Within Cell | 192 | 154.76 | .81 | |
| Total | 197 | 172.59 | | |

** Significant at .01 level

Table 5.15

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION HOME-FAMILY NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 6.33 | 3.16 | 4.54* |
| Within Cell | 244 | 170.14 | .70 | |
| Total | 246 | 176.47 | | |

* Significant at .05 level

Table 5.16

MEAN RESPONSIBILITY NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 13.68<br>S.D. = 1.08 | N = 17<br>M = 14.12<br>S.D. = 1.11 | N = 43<br>M = 14.63<br>S.D. = 1.20 | N = 110<br>M = 14.12<br>S.D. = 1.20 |
| Holy Family Hospital | N = 56<br>M = 13.79<br>S.D. = 1.32 | N = 17<br>M = 14.29<br>S.D. = .92 | N = 15<br>M = 14.60<br>S.D. = .91 | N = 88<br>M = 14.02<br>S.D. = 1.22 |
| Madison General Hospital | N = 113<br>M = 13.79<br>S.D. = 1.28 | N = 45<br>M = 14.00<br>S.D. = 1.38 | N = 89<br>M = 14.06<br>S.D. = 1.38 | N = 247<br>M = 13.92<br>S.D. = 1.34 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 13.76<br>S.D. = 1.24 | N = 79<br>M = 14.09<br>S.D. = 1.23 | N = 147<br>M = 14.28<br>S.D. = 1.31 | N = 445<br>M = 14.00<br>S.D. = 1.28 |

## Table 5.17

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION RESPONSIBILITY NES-LHSC-AREA SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 13.75 - 14.21 | - .46 |
| Achiever - Failure | 13.75 - 14.62 | - .87** |
| Underachiever - Failure | 14.21 - 14.62 | - .41 |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 13.79 - 14.00 | - .21 |
| Achiever - Failure | 13.79 - 14.06 | - .27 |
| Underachiever - Failure | 14.00 - 14.06 | - .06 |
| School of Nursing | | |
| Luther - Holy Family | 14.12 - 14.02 | + .10 |
| Luther - Madison General | 14.12 - 13.92 | + .20 |
| Holy Family - Madison General | 14.02 - 13.92 | + .10 |

** Significant at .01 level

Table 5.18

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION RESPONSIBILITY NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | .28 | .28 | .21 |
| Achievement Status | 2 | 27.19 | 13.59 | 10.15** |
| Achievement Status x Nursing School | 2 | .22 | .11 | .08 |
| Within Cell | 192 | 257.25 | 1.34 | |
| Total | 197 | 284.94 | | |

** Significant at .01 level

Table 5.19

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION RESPONSIBILITY NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 3.92 | 1.96 | 1.10 |
| Within Cell | 244 | 435.62 | 1.79 | |
| Total | 246 | 439.54 | | |

Table 5.20

MEAN OTHER-LOVE-MARRIAGE NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 11.84<br>S.D. = .91 | N = 17<br>M = 11.59<br>S.D. = 1.33 | N = 43<br>M = 12.14<br>S.D. = 1.23 | N = 110<br>M = 11.92<br>S.D. = 1.12 |
| Holy Family Hospital | N = 56<br>M = 11.89<br>S.D. = 1.27 | N = 17<br>M = 11.41<br>S.D. = 1.12 | N = 15<br>M = 12.13<br>S.D. = .83 | N = 88<br>M = 11.84<br>S.D. = 1.19 |
| Madison General Hospital | N = 113<br>M = 11.62<br>S.D. = 1.12 | N = 45<br>M = 11.76<br>S.D. = 1.09 | N = 89<br>M = 11.56<br>S.D. = 1.04 | N = 247<br>M = 11.62<br>S.D. = 1.09 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 11.74<br>S.D. = 1.12 | N = 79<br>M = 11.65<br>S.D. = 1.14 | N = 147<br>M = 11.79<br>S.D. = 1.11 | N = 445<br>M = 11.74<br>S.D. = 1.13 |

3

## Table 5.21

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION OTHER-LOVE-MARRIAGE NES-LHSC-AREA SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 11.88 - 11.50 | + .38 |
| Achiever - Failure | 11.88 - 12.14 | - .26 |
| Underachiever - Failure | 11.50 - 12.14 | - .64 |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 11.62 - 11.76 | - .14 |
| Achiever - Failure | 11.62 - 11.56 | + .06 |
| Underachiever - Failure | 11.76 - 11.56 | + .20 |
| School of Nursing | | |
| Luther - Holy Family | 11.92 - 11.84 | + .08 |
| Luther - Madison General | 11.92 - 11.62 | + .30 |
| Holy Family - Madison General | 11.84 - 11.62 | + .22 |

Table 5.22

ANALYSIS OF VARIANCE FOR PRE-ADMISSION OTHERS-LOVE-MARRIAGE NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | .00 | .00 | .00 |
| Achievement Status | 2 | 7.86 | 3.39 | 3.00* |
| Achievement Status x Nursing School | 2 | .34 | .17 | .13 |
| Within Cell | 192 | 251.21 | 1.31 | |
| Total | 197 | 259.41 | | |

* Significant at .05 level

Table 5.23

ANALYSIS OF VARIANCE FOR PRE-ADMISSION OTHERS-LOVE-MARRIAGE NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 1.13 | .56 | .48 |
| Within Cell | 244 | 288.86 | 1.18 | |
| Total | 246 | 289.99 | | |

Table 5.24

MEAN ACADEMIC NES-LHSC-AREA SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50 | N = 17 | N = 43 | N = 110 |
| | M = 9.94 | M = 10.06 | M = 10.60 | M = 10.22 |
| | S.D. = 1.06 | S.D. = 1.20 | S.D. = .98 | S.D. = 1.09 |
| Holy Family Hospital | N = 56 | N = 17 | N = 15 | N = 88 |
| | M = 10.00 | M = 10.53 | M = 10.73 | M = 10.23 |
| | S.D. = .91 | S.D. = .72 | S.D. = 1.03 | S.D. = .94 |
| Madison General Hospital | N = 113 | N = 45 | N = 89 | N = 247 |
| | M = 9.92 | M = 9.98 | M = 10.06 | M = 9.98 |
| | S.D. = 1.08 | S.D. = 1.31 | S.D. = 1.23 | S.D. = 1.17 |
| | | | | Total |
| Achievement Status Means | N = 219 | N = 79 | N = 147 | N = 445 |
| | M = 9.95 | M = 10.11 | M = 10.29 | M = 10.10 |
| | S.D. = 1.03 | S.D. = 1.19 | S.D. = 1.17 | S.D. = 1.15 |

Table 5.25

### DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION ACADEMIC NES-LHSC-AREA SCORES

| Groups | Means | Differences |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 9.98 - 10.29 | - .31 |
| Achiever - Failure | 9.98 - 10.63 | - .65** |
| Underachiever - Failure | 10.29 - 10.63 | - .34 |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 9.92 - 9.98 | - .06 |
| Achiever - Failure | 9.92 - 10.06 | - .14 |
| Underachiever - Failure | 9.98 - 10.06 | - .08 |
| School of Nursing | | |
| Luther - Holy Family | 10.22 - 10.23 | - .01 |
| Luther - Madison General | 10.22 - 9.98 | + .24 |
| Holy Family - Madison General | 10.23 - 9.98 | + .25 |

** Significant at .01 level

Table 5.26

ANALYSIS OF VARIANCE FOR PRE-ADMISSION ACADEMIC NES-LHSC-AREA SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | 1.03 | 1.03 | 1.06 |
| Achievement Status | 2 | 16.25 | 8.12 | 8.33** |
| Achievement Status x Nursing School | 2 | 1.09 | .55 | .56 |
| Within Cell | 192 | 187.21 | .98 | |
| Total | 197 | 205.58 | | |

** Significant at .01 level

Table 5.27

ANALYSIS OF VARIANCE FOR PRE-ADMISSION ACADEMIC NES-LHSC-AREA SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | .92 | .46 | .33 |
| Within Cell | 244 | 337.98 | 1.39 | |
| Total | 246 | 338.90 | | |

Table 5.28

MEAN TOTAL NES-LHSC SCORES BY ACHIEVEMENT STATUS
FOR 445 SECOND YEAR NURSING STUDENTS
AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50<br>M = 73.46<br>S.D. = 2.90 | N = 17<br>M = 74.59<br>S.D. = 4.21 | N = 43<br>M = 77.88<br>S.D. = 3.33 | N = 110<br>M = 75.36<br>S.D. = 3.86 |
| Holy Family Hospital | N = 56<br>M = 74.68<br>S.D. = 3.06 | N = 15<br>M = 75.18<br>S.D. = 3.07 | N = 15<br>M = 77.00<br>S.D. = 2.00 | N = 88<br>M = 75.17<br>S.D. = 3.01 |
| Madison General Hospital | N = 113<br>M = 74.07<br>S.D. = 3.45 | N = 45<br>M = 75.16<br>S.D. = 2.98 | N = 89<br>M = 75.22<br>S.D. = 3.57 | N = 247<br>M = 74.68<br>S.D. = 3.45 |
| | | | | Total |
| Achievement Status Means | N = 219<br>M = 74.09<br>S.D. = 3.25 | N = 79<br>M = 75.04<br>S.D. = 3.26 | N = 147<br>M = 76.18<br>S.D. = 3.57 | N = 445<br>M = 74.96<br>S.D. = 3.40 |

## Table 5.29

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION TOTAL NES-LHSC SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 74.12 - 74.88 | - .76 |
| Achiever - Failure | 74.12 - 77.66 | -3.54** |
| Underachiever - Failure | 74.88 - 77.66 | -2.78** |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 74.07 - 75.16 | -1.09* |
| Achiever - Failure | 74.07 - 75.22 | -1.15* |
| Underachiever - Failure | 75.16 - 75.22 | - .06 |
| School of Nursing | | |
| Luther - Holy Family | 75.36 - 75.17 | + .19 |
| Luther - Madison General | 75.36 - 74.68 | + .68 |
| Holy Family - Madison General | 75.17 - 74.68 | + .49 |

* Significant at .05 level
** Significant at .01 level

Table 5.30

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION TOTAL NES-LHSC SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | 11.14 | 11.14 | 1.14 |
| Achievement Status | 2 | 407.38 | 203.69 | 20.76** |
| Achievement Status x Nursing School | 2 | 34.56 | 17.28 | 1.76 |
| Within Cell | 192 | 1,883.67 | 9.81 | |
| Total | 197 | 2,336.75 | | |

** Significant at .01 level

Table 5.31

### ANALYSIS OF VARIANCE FOR PRE-ADMISSION TOTAL NES-LHSC SCORES AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Achievement Status | 2 | 78.52 | 39.26 | 3.37* |
| Within Cell | 244 | 2,842.86 | 11.65 | |
| Total | 246 | 2,921.38 | | |

* Significant at .05 level

Table 5. 32

## PRE-ADMISSION NES-LHSC TOTAL SCORES BY ACHIEVEMENT STATUS AT THREE SCHOOLS OF NURSING FOR 445 SECOND YEAR STUDENTS

| NES Total Scores | LUTHER |  |  | HOLY FAMILY |  |  | MADISON |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | Ach. | Under. | Fail. | Ach. | Under. | Fail. | Ach. | Under. | Fail. | Total |
| 84 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 83 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 82 | 0 | 0 | 3 | 1 | 0 | 0 | 2 | 0 | 0 | 6 |
| 81 | 0 | 1 | 3 | 0 | 1 | 0 | 4 | 0 | 5 | 14 |
| 80 | 1 | 1 | 4 | 0 | 1 | 3 | 0 | 3 | 6 | 19 |
| 79 | 2 | 1 | 7 | 2 | 1 | 2 | 5 | 4 | 11 | 35 |
| 78 | 1 | 2 | 5 | 7 | 0 | 0 | 8 | 5 | 5 | 33 |
| 77 | 4 | 1 | 4 | 4 | 2 | 1 | 10 | 5 | 4 | 35 |
| 76 | 5 | 1 | 5 | 13 | 4 | 5 | 9 | 3 | 11 | 56 |
| 75 | 6 | 2 | 2 | 6 | 0 | 4 | 12 | 6 | 10 | 48 |
| 74 | 4 | 1 | 3 | 6 | 2 | 0 | 14 | 6 | 8 | 44 |
| 73 | 6 | 3 | 2 | 2 | 2 | 0 | 8 | 3 | 11 | 37 |
| 72 | 7 | 1 | 0 | 7 | 3 | 0 | 13 | 3 | 7 | 41 |
| 71 | 6 | 1 | 1 | 3 | 0 | 0 | 12 | 4 | 1 | 28 |
| 70 | 4 | 0 | 0 | 3 | 1 | 0 | 6 | 3 | 4 | 21 |
| 69 | 3 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 2 | 9 |
| 68 | 1 | 1 | 0 | 1 | 0 | 0 | 6 | 0 | 2 | 11 |
| 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 66 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 65 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
|  | N=50 | N=17 | N=43 | N=56 | N=17 | N=15 | N=113 | N=45 | N=89 | N=445 |

|  | Luther | Holy Family | Madison |
|---|---|---|---|
| Achiever | $\frac{50}{110} = 46\%$ | $\frac{56}{88} = 64\%$ | $\frac{113}{247} = 46\%$ |
| Under-achiever | $\frac{17}{110} = 15\%$ | $\frac{17}{88} = 19\%$ | $\frac{45}{247} = 18\%$ |
| Failure | $\frac{43}{110} = 39\%$ | $\frac{15}{88} = 17\%$ | $\frac{89}{247} = 36\%$ |

## Chapter 6

## Nursing Sentence Completions (NSC)

The Nursing Sentence Completions (NSC) is an abbreviated form of the Luther Hospital Sentence Completions (LHSC). The forty stems which comprise the NSC (Thurston and Brunclik, 1964) are those from the LHSC which were found to be significant discriminators among achievement groups (See Chapter 8). The complete NSC form is given below.

### NURSING SENTENCE COMPLETIONS

Copyright 1964 by Thurston - Brunclik

Name: ____________________________________ Date: ______________

Below are a number of incomplete sentences. By completing these sentences you can express how you feel about many things. Try to do every one. Feel free to write whatever you wish.

1. When I go to nursing school, my family
2. In high school, I was happiest when
3. At home, I
4. Teachers
5. I feel sad if
6. When on a date, I
7. I like to help when
8. I'm different from other girls in that
9. My family
10. When someone tells me to do something
11. When with strangers, I
12. Supervised study periods
13. I pray
14. Ten years from now, I
15. Most people think that a nurse
16. Other people think of me as
17. I feel disgusted with myself when
18. When asked to take charge, I
19. The trouble with other people
20. If I could change
21. When I think of myself as a nurse, I
22. My mother thinks that I
23. I hope I never
24. When they ask for volunteers
25. I plan to marry when
26. If not admitted to nursing, I'll

27. In making a decision, I
28. Other girls my age
29. When I need money
30. I have most confidence in
31. When criticized, I
32. My most disappointing experience in high school
33. I worry
34. My greatest asset
35. Bathing someone is
36. The most important person
37. In school, I
38. When afraid, I
39. In high school my assignments
40. The first time away from home, I

The reasons for developing a short sentence completion form were twofold: 1) The test could be administered in a very short period of time, typically twenty to thirty minutes as opposed to the thirty to fifty minutes required for the LHSC and 2) more importantly, it was assumed that a concentration of significant discriminating sentence stems might lead to more valid predictions. Inspection of the results suggested that the students tired a bit in answering the longer form and that they were not as personally involved in responding to the latter items. In this connection it is of interest to note that of the 40 NES stems, 26 came from the first half of the LHSC stems and only 14 from the second half.

## Qualitative Use of NSC

The same advantages in administration and qualitative evaluation that were suggested for the LHSC (Chapter 5) presumably should accrue to the NSC as well. To facilitate a qualitative analysis, the NSC stems are listed in Chapter 8 according to area, e. g. attitude toward nursing, home and family, and so forth.

## Nursing Education Scale - NSC

### Inter-Scorer Reliability

Thirty-six NSC records of 1964 applicants to Regina School of Nursing, Albuquerque, New Mexico, were selected for evaluation of inter-scorer agreement in application of NES to the NSC. These records were scored by a clinical psychologist (A), a nurse (B) who has had considerable experience in scoring sentence completion forms, two nurses (C and D) who had had no scoring experience, and a university student (E-1), who was majoring in psychology. This same student also re-scored the 36 NSC's (E-2). Table 6. 1

indicates the inter-correlations of the NES Total Scores obtained in these six scorings. Inter-correlations of the Area scorings were computed and are available. Evidence of high agreement between scores was noted with the highest agreements between B and E-1 (r = .80), B and A (R = .77), B and D (r = .79), and D and E-1 (r = .83). Of the five scorers, C, a nurse, seemed to be in least agreement with the others.

An additional indication of scorer reliability was obtained as in the case of the LHSC-NES by means of an analysis of variance (Winer, 1962, p. 128). The formula and specific computational procedures may be noted in Chapter 5. The estimate of reliability of the average of the six scorings made on each of the NSC records is given in Table 6.2. The reliability coefficient is .92. This indicates that the NES can be applied to NSC with an expectation of consistent scorings.

### Test-Retest Reliability

NSC's were administered routinely to applicants at the Lafayette Campus of the Nursing Section, Purdue University. In order to evaluate the stability of NSC performance as scored with the NES, NSC's were re-administered to this group after the routine administration of the NSC and Nursing Attitudes Inventory (NAI). Twelve days elapsed between test and re-test with the NSC. All tests were scored by the psychologist using the NES. Two NSC testings were available for 56 students. Correlations were then computed using these two sets of records for six NES-NSC Area Scores and NES Total Scores. The results of these computations are noted in Table 6.3. All correlations with the exception of Nursing and Academic Area scores are statistically significant at the .05 level. The significant correlations ranged from a low of .26 to a high of .56.

### Normative Standards

In the course of this research norms were established in percentile form for NES-NSC Total and Area Scores. These are presented in Appendix C-2. These standards are based upon 686 NSC records acquired during testing in Fall, 1964 and 1965.

## Plans for Research Involving the NSC

### Cross-Validation of Nursing Education Scale - NSC

While the considerations involving qualitative analysis mentioned in previous chapters would apply to the NSC as well as the LHSC, the quantitative scoring system cannot be simply transferred to the NSC. As the NES was derived and validated on the basis of pre-admission LHSC performance, this scoring device should not be applied to NSC's given to newly enrolled students unless its validity in these circumstances has been evaluated. The present researchers have been investigating the validity of the NSC as scored by the NES since the fall of 1964 at seven schools of nursing. All are diploma schools unless otherwise designated. NSC's were administered annually to freshmen students at:

Henry W. Bishop Memorial School of Nursing, Pittsfield, Massachusetts
Holy Family School of Nursing, Manitowoc, Wisconsin
Lutheran Hospital School of Nursing, Cleveland, Ohio
Madison General School of Nursing, Madison, Wisconsin
Purdue University (Associate Degree), Nursing Section, Lafayette, Indiana
Regina School of Nursing, Albuquerque, New Mexico

Beginning in the fall of 1965, the annual administration of NSC's to freshmen began at the following schools:

Emanuel Hospital School of Nursing, Portland, Oregon
Jackson Memorial Hospital School of Nursing, Miami, Florida
Mercy Hospital School of Nursing, New Orleans, Louisiana

The fall, 1965 testing at Henry W. Bishop Memorial School of Nursing, Pittsfield, Massachusetts, and Regina School of Nursing, Albuquerque, New Mexico marks the final testing at these schools since it has been announced that they will close with the graduation of currently enrolled students. Annual testing continues at the other schools.

The NES scoring of the NSC's written in 1964 will be related to students' graduation or failure to graduate after three years (1967). This will provide a basis for ascertaining this test's validity to predict success in nursing education. In 1968 and 1969 similar studies of validity will be made for the classes tested in 1965 and 1966.

## REFERENCES

1. Thurston, J. R. and Brunclik, H. L., Nursing Sentence Completions, Eau Claire, Wisconsin: Nursing Research Associates, 1964.

2. Winer, B. J., Statistical Principles in Experimental Design, New York: McGraw-Hill Book Company, Inc., 1962.

### Table 6.1

### INTER-SCORER CORRELATIONS OF NES-NSC TOTAL SCORES FROM SIX SCORINGS OF 36 NSC'S[a]

|  | Scorers[b] |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Scorers | A | B | C | D | E-1 | E-2 |
| B | .77 |  |  |  |  |  |
| C | .51 | .56 |  |  |  |  |
| D | .66 | .79 | .36 |  |  |  |
| E-1 | .72 | .80 | .50 | .83 |  |  |
| E-2 | .81 | .79 | .59 | .76 | .83 |  |
| Total Mean NES Scores | 75.61 | 75.42 | 76.52 | 76.11 | 74.75 | 76.05 |
| S.D. | 3.09 | 2.82 | 3.68 | 3.39 | 3.64 | 3.24 |

a All correlations are significant at beyond the .01 level

b See text for special and professional backgrounds of scorers

### Table 6.2

### ANALYSIS OF VARIANCE AND RELIABILITY ESTIMATE FOR NES-NSC TOTAL SCORES OF SIX SCORINGS OF 36 NSC'S

| Source | df | SS | MS |
|---|---|---|---|
| Between students | 35 | 1676.50 | 47.90 |
| Between scores | 5 | 70.52 | 14.10 |
| Residual | 175 | 643.98 | 3.68 |
| Total | 215 | 2391.00 |  |

Reliability estimate for 6 scorers = .92

Table 6. 3

## TEST-RETEST CORRELATIONS OF NES-NSC TOTAL AND AREA SCORES (N=56)

NES-NSC Scoring
(Retest)

| NES-NSC Scoring (Test) | Areas | | | | | | | Test | |
|---|---|---|---|---|---|---|---|---|---|
| | N | Se | H-F | Re | O-L-M | Ac | Total | Means | S. D. |
| Nursing | .20 | | | | | | | 9.20 | .88 |
| Self | | .26* | | | | | | 22.71 | 1.60 |
| Home-Family | | | .56** | | | | | 8.00 | 1.18 |
| Responsibility | | | | .25* | | | | 14.04 | 1.32 |
| Others-Love-Marriage | | | | | .38** | | | 11.93 | 1.01 |
| Academic | | | | | | .12 | | 10.04 | 1.01 |
| Total | | | | | | | .43** | 75.91 | 3.48 |
| Retest Means | 9.09 | 22.73 | 7.70 | 13.84 | 11.63 | 10.16 | 75.13 | | |
| S. D. | .84 | 1.27 | .81 | 1.08 | 1.10 | 1.17 | 2.69 | | |

* Significant at .05 level
** Significant at .01 level

# Chapter 7

## Nurse Attitudes Inventory (NAI), Forms I and II*

### Introduction

The early promise of personality inventories in the field of nursing education has not been realized to any great extent (See Chapter 1). Thurston and Brunclik (1965) have indicated that the complexity of the factors related to success in nursing education may preclude the statement of simple relationships of personality inventories performance to nursing school achievement. Among other problems, the difficulty of obtaining "truthful" responses to personality inventories or evaluating the effect of faking on test performance constitute chronic problems.

The ease of administration, simple and reliable machine scoring, and straightforward interpretation represent advantages to these inventories which may explain their continued use in the absence of anything approaching substantial evidence of validity. If these tests could demonstrate practical validity, then they could constitute a substantial source of assistance to schools of nursing. Nursing school faculties are always pressed for time and usually do not have professional psychologists available to them to interpret fully the findings of projective tests which have begun to show some promise (Mindess, 1957).

The development of the Nurse Attitudes Inventory (NAI) was undertaken in an effort to make available a device which would have many of the unique advantages of personality inventories while at the same time avoiding or minimizing the problems typically encountered with this type of test.

### Basic Considerations in NAI Construction

Two primary considerations prevailed in the selection of the foils for the items of the Nurse Attitude Inventory (NAI). First and foremost, to what extent did a particular completion appear likely to differentiate successful from unsuccessful nursing students? Second, to what extent was a particular completion likely to be chosen by a student on the basis of her desire to be admitted to a nursing school rather than as it truthfully applied to her? Considerable effort was made to answer the first question during the development of the Nursing Education Scale (Chapter 8). The second point, the susceptibility of the test to falsification by applicants or new students was believed important enough to merit extended attention. The attempt to lessen the likelihood of falsification and to allow for its detection became a major focus of the research during 1964 and 1965. This effort is discussed later in the chapter in "Student Tendencies to Choose Completions on Basis of Desirability".

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*A brief abstract of this chapter was published in the Research Reporter, Nursing Research, 1966, 15, 271-272.

## NES Background for NAI Development

Inasmuch as the construction of the NAI was tied in very closely with the Nursing Education Scale a review of the NES development might be helpful at this point (See Chapters 2 and 8 for this detailed account). In brief, of the 90 sentence stems of the LHSC, 59 stems were found capable initially to be of eliciting differential response from the successful and withdrawal-failure nursing students (derivation sample). For these 59 stems, the number of completion categories which differentiated these groups ranged in number from one to five with the majority of stems having two categories. The differentiating categories of those 59 stems and the responses representing each constituted the Nursing Education Scale, Preliminary Form. When this scale was cross-validated on a new and independent sample, it was found that 40 of the stems continued to elicit differential response from successful and unsuccessful students (Thurston and Brunclik, 1965). In considering the completions to these 40 stems, although some responses failed to survive the cross-validation, at least one response category continued to differentiate the groups (cross-validation sample). The 40 stems and the response categories constitute the Nursing Education Scale (NES). The NES is used as the basis for scoring Luther Hospital Sentence Completions (LHSC) and Nursing Sentence Completions (NSC). The 40 stems became the Nursing Sentence Completions (NSC) (See Chapter 6). Thus, there were three sets of sentence stems: a) forty stems which were found to elicit differential response in terms of student achievement status in both the derivation and cross-validation samples of the NES development; b) nineteen stems which elicited such differential response only in the derivation sample; and c) thirty-one stems which failed to elicit differential response in the derivation sample (no investigation of these stems was undertaken in the cross-validation phase of this research). These will be referred to as the "a", "b", and "c" stems respectively in the following discussion.

## Student Tendencies To Choose Completions On Basis of Desirability

The research, on the problem of faking, involved eight experimental forms called Exercises I, II, III, IV, V, VI, VII, and VIII. Exercise I consists of thirty-five sentence stems (20 "a" stems, 10 "b" stems and 5 "c" stems) each one of which has nine possible completions which represent categories whose relationship or lack of relationship to success in nursing education has been demonstrated in previous research (Thurston and Brunclik, 1965). Each of these completions was selected from those actually given by students in the research.

The following two items from Experimental Form I are illustrative:

1. WHEN I GO TO NURSING SCHOOL, MY FAMILY WILL . . . . .
    ____ be proud
    ____ have extra expense
    ____ help finance my schooling
    ____ be happy
    ____ go on without me
    ____ encourage me in my studies
    ____ miss me
    ____ not have to adjust too much
    ____ want me to become a successful nurse and person
2. AT HOME, I . . . . .
    ____ try to get along with my family
    ____ am happy and relaxed
    ____ usually express myself freely
    ____ have fun
    ____ watch TV
    ____ find sleeping a good pasttime
    ____ don't get into trouble
    ____ am expected to do my share of the work
    ____ feel secure

In completing an Experimental Form, each student was asked to rank the nine completions for each of the thirty-five sentence stems on the basis of its creating a favorable impression for an applicant upon the admission committee of a nursing school. The number "1" was placed in front of the completion that the student thought would be best for this purpose, "2" in front of the next and so on until "9" was placed before the completion that the student felt was the least likely to create a favorable impression upon this admission committee.

Primary selection criteria for the completions were as follows: 1) Each list of nine completions included one or two responses representing categories which had consistently differentiated the nursing achievement categories in both derivation and cross-validation samples. 2) In selecting other foils, a preference was accorded those completions which differentiated the achievement groups only in the derivation sample. 3) The remaining foils would be drawn from those which did not appear to differentiate the achievement groups at any time.

The selection of completions was guided by the following additional considerations. The completions selected were representative of various NES score categories. Inasmuch as possible, responses were avoided which in the opinion of the researchers, were obviously those that an applicant would give or avoid if she wished to be admitted. The responses chosen for particular categories were not consistently longer nor shorter than others. All choices were appropriate grammatically to the sentence stem.

Exercise II consisted of thirty-five sentence stems (20 "a" stems, 9 "b" stems and 6 "c" stems) each having nine possible completions as indicated for Exercise I. All the stems of Exercise II were different from those found in Exercise I.

Exercise III consisted of the same "a" and "b" stems as were noted in Exercise I. For each stem, the nine completions were different from those found in Exercise I. The five "c" sentence stems and the completions were entirely different from those in Exercise I.

Exercise IV consisted of the same "a" and "b" sentence stems as Exercise II. The nine possible completions for each stem were different from those of Exercise II. The six "c" stems and completions were completely different from those in Exercise II.

In each of the Exercises, I, II, III, IV, the order of the sentence stems was determined by its original position in the LHSC. The order of the nine completions to each sentence stem was assigned by means of random numbers.

Exercises V, VI, VII, and VIII are complete reversals of Exercises I, II, III, and IV, respectively. Each has the same sentence stems as their counterparts (ExercisesI and V, Exercises II and VI, Exercises III and VII, and IV and VIII) and the nine completions are the same for each item. The order of both stems and completions, however, has been completely reversed. What was the first of the nine completions to stem 1 of Exercise I was the last of the nine completions to stem 35 of Exercise V. The last of nine completions to the last stem of Exercise I was the first of the nine completions to the first stem of Exercise V. The same complete reversals held true for Exercises II and VI, III and VII, IV and VIII.

The substantial effort involved in the use of additional Exercises V, VI, VII, and VIII was believed necessary in an effort to compensate for any "order effect" which might exert a systematic biasing effect upon these rankings. In other words, if a particular completion always appeared last for the last stem of an exercise it might be ranked differently than if it were always the first possible completion listed for the first sentence stem. Fatigue, "nervousness", and boredom of the student are only a few of the factors which might contribute to a systematic raising or lowering of the rank of a completion on this basis. Use of Exercises V through VIII in conjunction with Exercises I through IV was believed to minimize to a large extent this type of constant error. While the nature of "order effects" could be explored with the data of this research, it is of only tertiary interest in this study. Accordingly, this matter receives no further formal attention in this report.

The Exercises described above were administered during 1965 to all freshmen students at Luther Hospital School of Nursing, Eau Claire, Wisconsin (N=45), Henry W. Bishop Memorial School of Nursing, Pittsfield, Massachusetts (N=27), Lutheran Hospital School of Nursing, Cleveland, Ohio (N=35), and Regina School of Nursing, Albuquerque, New Mexico (N=34). Approximately equal numbers of Exercises I through VIII were administered in each school. The results deriving from Exercises I and V were combined, as were Exercises II and VI, III and VII, and IV and VIII. These combined pairs of exercises were referred to as Combo A, B, C, and D, respectively. Mean ratings for each of the nine completions to each of the 140 sentence stems were calculated. The computations involving the results from these four diploma schools, provided a basis for selection of items for the Nurse Attitudes Inventory. In addition, thirty-two junior students at Luther Hospital School of Nursing and forty-one freshmen students at Purdue University (two-year associate degree program) were given these exercises in order to provide additional, general information.

## Selection of Items for Nurse Attitudes Inventory (NAI), Forms I and II

The data deriving from the 70 Combo A and B items became the basis for the Nurse Attitudes Inventory, Form I (Thurston and Brunclik, 1965), Nurse Attitudes Inventory, Form II (Thurston and Brunclik, 1966) was constructed on the basis of the data of the 70 Combo C and D items. NAI Forms I and II thus have 59 stems in common, although the possible completions are almost completely different for each sentence stem. Eleven sentence stems and completions of Form I and Form II are completely different.

In the selection of completions for the items of the NAI, the researchers were guided by the two basic considerations mentioned previously in this paper: 1) the extent to which the completion was associated with success or failure in nursing education, and 2) the degree to which a completion would be chosen by students wishing to create a favorable impression upon a nursing school admissions committee.

In making the final selections for the NAI, emphasis was placed upon the first basic consideration. Each of the categories of the Nursing Education Scale (NES) is represented by at least one sentence completion to the stems of the NAI. In addition, an effort was made to have representation of those categories of the NES, Preliminary Form, which did not survive the cross-validation analysis. Decisions regarding which of the several completions to choose representing each of these significant and possibly significant categories were made in the light of information involving the second basic consideration, susceptibility to faking.

## Modifications of Sentence Stems and Completions

In addition to the intensive checking of the tests by the researchers, the inventories were distributed to psychologists, social workers, and university students in order to allow them to respond critically to the form and its instructions. Changes were introduced on the basis of their suggestions.

At the same time that the stems and completions were being selected for the NAI, directions for its administration was being developed. Preliminary directions and several sample items were given to students at

Wisconsin State University - Eau Claire as a pre-test. On the basis of their performance and suggestions they made, the direction sheets were modified until the final form emerged.

In the development of the Nurse Attitudes Inventory (NAI) it was necessary to consider some minor editing of a few sentence stems because the form might be used for both applicants and newly-admitted students. An example of a sentence stem in need of modification was the following: "If not admitted to nursing school, I'll . . . . ." Administration of this significant item to new students already admitted to a school of nursing was not entirely appropriate. Shifting from the first to the third person was hard to justify. Separate forms would have been one answer, but two forms differing only in this way did not seem practical. Experience with the LHSC administered to new students revealed that it was only a minor problem. Since it was assumed that the NAI would probably be used most often with new students, the change was made to "If not admitted to nursing, I'd . . . . ."

## Final NAI Pre-Testing

The final phase of developments of the Nurse Attitudes Inventory, Forms I and II was started in July, 1965. As a final trial of the inventory, copies of the NAI, Form I were sent to Holy Family Hospital School of Nursing, Manitowoc, Wisconsin and Madison General Hospital School of Nursing, Madison, Wisconsin. These NAI's were administered to students already enrolled in this school. The purpose was two-fold: 1) To provide one final trial of the NAI prior to its general use in the research program in the fall of 1965, specifically to assess the clarity of instructions, the mechanics of recording responses, and the distribution of student NES scores were investigated. 2) To provide an estimate of the time required for NAI administration.

This final trial did not indicate any need for any changes in the NAI, Form I. The time required for its administration ranged from 15 to 30 minutes.

## Administration Instructions and Two Examples of NAI Items

Instructions - In the test booklet you will find a number of sentence beginnings together with possible completions. Please read each sentence beginning and the five completions that follow it. In each case select the completion that most nearly resembles the one you yourself would make in completing the sentence. Record your answers on the separate answer sheet.

1. When I go to nursing school, my family will . . . . .
    1. be proud
    2. have extra expense
    3. be happy
    4. miss me
    5. not have to adjust too much

2. In high school, I was happiest when I . . . . .
    1. could keep on the friendly side of everyone
    2. had good marks
    3. was participating with the band
    4. was with a group of friends either cheerleading or in a class play
    5. was a senior

## Scoring of Nurse Attitudes Inventory (NAI)

### Score Sheets and Scoring Stencils

Regular IBM score sheets were used to facilitate the recording of answers by students. These sheets could be hand-scored by means of stencils or scored electronically if the students used the special pencils required for such scoring.

### Validity Scores

In an effort to detect individual falsification on the NAI, two verification scales were constructed and identified as V-1 and V-2. Of the five foils chosen for each of the sentence stems of the NAI, one would have received the lowest mean rating and one the highest mean rating on the basis of their being chosen by students attempting to create a good impression upon an admission committee of a nursing school. The V-1 (Verification - 1) scale consisted simply of seventy completions, each one of which had the lowest mean rating of the five completions for each of the seventy NAI stems. Inasmuch as the low rating reflected nursing student opinion that this was the one of five most likely to be chosen if one wished to create a good impression, it seemed reasonable to assume that this scale may evaluate this tendency.

The V-2 (Verification -2) scale items consisted of seventy completions each of which was the highest ranked completion for each of the seventy NAI stems. In each instance, this was the completion of five which a student would be least likely to choose if she wished to make a good impression. It seemed worthwhile to determine if the scale could detect a tendency to create an unfavorable impression.

### Area and Total NES-NAI Scores

The 40 sentence stems representing the NES scale were the only ones scored in terms of success or failure. Area scores were determined on the basis of responses to Area items as indicated in Chapter 8. Answers which represented responses more likely to be given by successful nursing students were given a score of one. Answers which represented responses given most often by unsuccessful students were given a score of three. All other responses were given a score of two. After each area score had been obtained, all were added for the total NES score for the NAI.

## Normative Standards

In the course of this research norms were established in percentile form for NES-NAI Total Scores (Form I), and NES-NAI Area scores. These are based upon 463 NAI's administered in Fall, 1965. The norms are presented in Appendix C-3.

## Plans for Research Involving The NAI, Forms I and II

### Administration

In fall, 1965, as part of the longitudinal research project, the Nursing Sentence Completions and the Nurse Attitudes Inventory, Form I, were administered to newly-admitted students during approximately the first ten days of their schooling at seven schools of nursing. These schools were as follows:

Emanuel Hospital School of Nursing, Portland, Oregon
Henry W. Bishop Memorial School of Nursing, Pittsfield, Massachusetts
Holy Family Hospital School of Nursing, Manitowoc, Wisconsin
Jackson Memorial Hospital School of Nursing, Miami, Florida
Lutheran Hospital School of Nursing, Cleveland, Ohio
Mercy Hospital School of Nursing, New Orleans, Louisiana
Regina School of Nursing, Albuquerque, New Mexico

In this research Nursing Sentence Completions were given before the Nurse Attitudes Inventory, Form I. A minimum of two days elapsed between these testings.

The research at Purdue University involves students enrolled in an associate degree program. This research effort, under the direction of Dr. John F. Feldhusen, involved nursing students at Lafayette, Fort Wayne, and Hammond, Indiana. The testing of the approximately 140 students enrolled at these three schools was undertaken in late September and early October, 1965.

Different procedures of enrollment at Madison General Hospital School of Nursing also necessitated special procedures. At this school, the freshmen students spend their first year in other colleges and universities which may be quite far removed from Madison, Wisconsin. One day is set aside in the fall for the orientation of these students. This is the only time that the freshmen meet as a group before they return to the Madison school the following summer for the beginning of their junior year. The NSC and NAI were administered to them at this time. Inasmuch as attendance is not obligatory, not all Madison freshmen students took the NSC and NAI.

### Scoring the NAI

Special punched scoring sheets were constructed. These sheets were superimposed upon the NAI answer sheets. The scoring was thus a clerical counting and recording procedure. Cross-checks between the Total Score and the sum of Area Scores were designed to increase the likelihood of scoring consistency. The scoring and re-scoring of 50 NAI records revealed complete agreement (r = 1.00).

### Test-retest Reliability

As part of the regular research involving validation of the NSC's and NAI's these tests were administered to freshmen nursing students in the Purdue associate degree program at Fort Wayne and Hammond. Then NAI's were administered again to 63 of these students twelve days later. Correlations were computed between the test and retest NES Total Scores, Area Scores, and Validation Scores for the first and second administration. The results of these computations are given in Table 7.1. All correlations are significant at the .01 level.

### Validation of NAI, Forms I and II

The results of the 1965 and 1966 Fall admission testing will be related to student achievement status in 1968 and 1969. Graduation and failure-withdrawal represent the prime criteria to which the Validation, Area, and Total NES-NAI scores will be related. Assessment of the validity and significance of these scores must await this further research.

Intensive investigation of NAI, Form II, was begun in 1966. This will involve administration of this form after NSC testing to applicants at:

Nebraska Methodist Hospital School of Nursing, Omaha, Nebraska
California Hospital School of Nursing, Los Angeles, California
Bryn Mawr School of Nursing, Bryn Mawr, Pennsylvania
St. Vincent's Hospital School of Nursing, New York, New York
St. Joseph's Hospital School of Nursing, Marshfield, Wisconsin

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5. Thurston, J. R., Brunclik, H. L., and Finn, P. A., "The Fall-Out Problem in Nursing Education", *Nursing Forum*, 1962, *1*, 90-97.

### Table 7.1

### TEST-RETEST CORRELATIONS OF NES-NAI TOTAL AND AREA SCORES (N=63)[a]

NES-NAI SCORINGS
(Retest)

| Test NES-NAI Scorings | Areas | | | | | | Validity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Se | H-F | Re | O-L-M | Ac | V-1 | V-2 | Total | Test Means | S.D. |
| Nursing | .69 | | | | | | | | | 9.13 | 1.14 |
| Self | | .80 | | | | | | | | 21.35 | 1.72 |
| Home-Family | | | .67 | | | | | | | 8.30 | .99 |
| Responsibility | | | | .62 | | | | | | 14.25 | 1.44 |
| Others-Love-Marriage | | | | | .62 | | | | | 12.11 | .88 |
| Academic | | | | | | .64 | | | | 10.08 | 1.10 |
| Verifiability-1 | | | | | | | .71 | | | 23.11 | 4.97 |
| Verifiability-2 | | | | | | | | .65 | | 8.67 | 3.56 |
| Total | | | | | | | | | .71 | 75.22 | 3.34 |
| Retest Means | 9.08 | 21.16 | 8.51 | 14.24 | 12.19 | 10.06 | 22.16 | 8.41 | 75.23 | | |
| S.D. | 1.30 | 2.00 | 1.08 | 1.35 | 1.03 | 1.05 | 5.70 | 3.44 | 3.45 | | |

[a] All correlations significant at the .01 level

# Chapter 8

## Nursing Education Scale (NES)*

## Development and Refinement

In view of the great importance of the Nursing Education Scale (NES) in this research, it is important to understand its development and the procedures used in its refinement. The Nursing Education Scale, *Preliminary Form* was developed and evaluated in Phase I. Its derivation is summarized in Chapter 2. The results of Phase I research led to a shorter scale, the Nursing Education Scale (NES), which is now the scoring standard for the LHSC, NSC, and NAI, Forms I and II. In addition, attempts have been made to divide the Total NES score into area scores which might describe more specific attitudes of students in relation to performance in nursing school.

This chapter describes refinements in the further development of the Nursing Education Scale (NES), and the considerations underlying the evolution of the attitude area scores.

### Nursing Education Scale, *Preliminary Scale* and Nursing Education Scale (NES)

The LHSC's of those students who applied in 1960 and 1961 to Luther and Holy Family schools and who were evaluated in 1962 and 1963 were scored with the NES, *Preliminary Form*. This served as the basis for the first attempt to cross-validate this scoring method. The basic measure of NES, *Preliminary Form*, validity was the extent to which its scores would differentiate the Failure group from the Achiever and Underachiever groups. These procedures provided the basis for a first refinement of this scoring standard. The NES, *Preliminary Form*, was revised so as to include only forty sentence stems out of the original fifty-nine. These stems were selected on the basis of consistent power to elicit differential responses from Achievers and Failures in both the derivation and cross-validation samples. This forty-item scoring standard is referred to as the Nursing Education Scale (NES).

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*The NES has been described in detail elsewhere (Thurston, J. R. and Brunclik, H. L., *The Prediction of Success in Nursing Education, Phase I, 1959-1964*, Eau Claire, Wisconsin: Luther Hospital, January, 1965; Thurston, J. R. and Brunclik, H. L., *Luther Hospital Sentence Completions and Nursing Sentence Completions, 1965 Manual*, Eau Claire, Wisconsin: Luther Hospital, September, 1965). The complete Nursing Education Scale (NES) with its scores and representative responses will be included in Appendix A of this Phase II report.

In view of the high correlation (r = .96) between the 0, 1, 2, 3, and 4 point scoring system of the NES, Preliminary Form, and a simpler 1, 2, and 3 point system, the latter values are used with the Nursing Education Scale (NES).

In addition, with the NES, Preliminary Form, the thirty-one non-scoreable completions were automatically scored as "2". After the cross-validation, the number of such non-differentiating sentence stems was fifty. It appeared advantageous to eliminate this constant of "2" for these items and concentrate the scoring on only those forty stems (NES) which had been found to discriminate between the achievement groups consistently. These changes must be borne in mind when comparing the results of Phase I research with subsequent research.

## NES Reliability and Validity

Inter-scorer and test-retest reliability as well as validity assessments of NES scoring of LHSC, NSC, and NAI are reported in Chapters 5, 6, and 7 respectively. Inter-relationships of NES scores from these tests are described and discussed in Chapter 9.

## Nursing Education Scale (NES) - Attitudinal Areas

Content analysis of the sentence stems of the NES indicated that dividing them into six attitudinal areas was possible. The Other area score was combined with the Love and Marriage score to form an Other-Love-Marriage area. It was felt that an evaluation of a student's performance in terms of specific areas such as these might be a valuable supplement to the Total Score. If relationships between these area scores and student performance could be demonstrated, it might be possible to specify more clearly certain potential areas of student difficulty and strength. Individual test profiles might then be constructed using the six Area Scores and Total Score which would describe significant patterns of the student's attitudes in relation to achievement in a school of nursing.

The sentence stems representing these areas are as follows:

### Attitudes Concerning Nursing (N)

| | LHSC No. | NSC No. | NAI Form I | NAI Form II |
|---|---|---|---|---|
| When I go to nursing school, my family will . . . . . | 1 | 1 | 1 | 1 |
| Most people think that a nurse . . . . . | 21 | 15 | 19 | 18 |
| When I think of myself as a nurse, I . . . . . | 31 | 21 | 25 | 25 |

| | LHSC No. | NSC No. | NAI Form I | NAI Form II |
|---|---|---|---|---|
| If not admitted to nursing, I'd . . . . . | 41 | 26 | 33 | 34 |
| Bathing someone is . . . . . | 71 | 35 | 56 | 56 |
| **Attitudes Concerning Self (Se)** | | | | |
| In high school, I was happiest when . . . . . | 2 | 2 | 2 | 2 |
| I feel sad if . . . . . | 8 | 5 | 7 | 6 |
| I'm different from other girls in that . . . . . | 12 | 8 | 11 | 10 |
| I pray . . . . . | 18 | 13 | 17 | 15 |
| Other people think of me as . . . . . | 22 | 16 | 20 | 19 |
| I feel disgusted with myself when . . . . . | 24 | 17 | 21 | 20 |
| If I could change . . . . . | 28 | 20 | 24 | 24 |
| I hope I never . . . . . | 34 | 23 | 28 | 28 |
| I have most confidence in . . . . . | 54 | 30 | 43 | 43 |
| I worry . . . . . | 64 | 33 | 49 | 50 |
| My greatest asset . . . . . | 68 | 34 | 53 | 53 |
| When afraid, I . . . . . | 84 | 38 | 65 | 65 |
| **Attitudes Concerning Home and Family (H-F)** | | | | |
| At home, I . . . . . | 3 | 3 | 3 | 3 |
| My family . . . . . | 13 | 9 | 12 | 11 |
| My mother thinks that I . . . . . | 33 | 22 | 27 | 27 |
| The first time away from home, I . . . . . | 90 | 40 | 70 | 70 |
| **Attitudes Concerning Personal Responsibility (Re)** | | | | |
| I like to help when . . . . . | 10 | 7 | 9 | 8 |
| When someone tells me to do something . . . . . | 15 | 10 | 14 | 12 |
| Ten years from now, I . . . . . | 20 | 14 | 18 | 17 |
| When asked to take charge, I . . . . . | 25 | 18 | 22 | 21 |

| | LHSC No. | NSC No. | NAI Form I | NAI Form II |
|---|---|---|---|---|
| When they ask for volunteers . . . . . | 35 | 24 | 29 | 29 |
| In making a decision, I . . . . . | 45 | 27 | 37 | 36 |
| When I need money . . . . . | 50 | 29 | 40 | 41 |
| When criticized, I . . . . . | 55 | 31 | 44 | 44 |
| Attitudes Concerning Other People, Love, and Marriage (O-L-M) | | | | |
| When on a date, I . . . . . | 9 | 6 | 8 | 7 |
| When with strangers, I . . . . . | 16 | 11 | 15 | 13 |
| The trouble with other people is . . . . . | 26 | 19 | 23 | 22 |
| I plan to marry when I . . . . . | 39 | 25 | 32 | 32 |
| Other girls my age . . . . . | 46 | 28 | 38 | 37 |
| The most important person . . . . . | 76 | 36 | 60 | 59 |
| Attitudes Concerning Academic Matters (Ac) | | | | |
| Teachers . . . . . | 7 | 4 | 6 | 5 |
| Supervised study periods . . . . . | 17 | 12 | 16 | 14 |
| My most disappointing experience in high school was . . . . . | 57 | 32 | 45 | 45 |
| In school, I . . . . . | 77 | 37 | 61 | 60 |
| In high school, my assignments were . . . . . | 87 | 39 | 68 | 67 |

### Nursing Education Scale (NES) - Item Evaluation

In a preliminary effort to assess the contribution of individual NES items, each of the forty item scores was correlated with the NES Total Score and the Area Score of the area of which the item was a part. In addition, the Area Scores were correlated with the Total Scores. The Nursing Sentence Completions (NSC) of 223 students at six schools of nursing had been scored with the Nursing Education Scale. These correlations are summarized in Table 8.1. The NES item numbers are the same as those of the NSC sentence stems. Column 1 identifies the NES item number, Column 2, the attitude area of which the item is a part, Column 3, the correlation of the item scores with area scores, and Column 4, the correlation of the item scores with the total NES score.

The results of Table 8.1 should be viewed with caution. The correlation of a NES item or Area Score with Total Score to which it itself contributed would produce a somewhat inflated correlation coefficient.

Thirty-six of the NES Item Scores were found to be related to the Area Scores at a statistically significant level (.05 level). Twenty-five of the NES Item Scores were related significantly to Total Score. All six Area Scores were correlated with Total Score at a significant level (.01 level).

These results have some rather interesting implications in terms of future study. If a relationship between Total Score and nursing achievement status continues to be demonstrated, the results of Table 8.1 might be interpreted as highlighting the complexity of determinants of student nursing performance. In other words, unique configurations of items reflecting individual strengths and weaknesses might be revealed in the Total Score even though the correlation of the Item Scores to Total Score may not be remarkably high when calculated on a group basis. An analysis of the relationship of Item Scores to achievement status will be undertaken as part of the continuing cross-validation. However, if there is substance to the "configural relationships" mentioned previously, one might not expect to find particularly high correlations of individual Item Scores with nursing school achievement when using group performance as the basis for ascertaining the relationship. A factor analysis of the scale will also be undertaken to ascertain the relation between the present logically derived attitude areas and a statistical approach as factor analysis implies.

## Normative Standards

In this research norms were established for NES Total and Area scores as derived from performance on the LHSC, NSC, and NAI. These may be found in Appendices C-1, C-2, and C-3 respectively.

Table 8.1

## CORRELATIONS OF NES ITEM SCORES WITH AREA AND TOTAL SCORES ON THE BASIS OF 223 NSC'S ADMINISTERED AT SIX SCHOOLS OF NURSING

| NES Item | Attitude Area | Correlations Area | Correlations Total | NES Item | Attitude Area | Correlations Area | Correlations Total |
|---|---|---|---|---|---|---|---|
| 1 | N | .59** | .16** | 27 | Re | .10 | .10 |
| 2 | Se | .20** | .12 | 28 | O-L-M | .38** | .22* |
| 3 | H-F | .69** | .24** | 29 | Re | .14* | -.03 |
| 4 | Ac | .39** | .19** | 30 | Se | .36** | .14* |
| 5 | Se | .26** | .22** | 31 | Re | .34** | .18** |
| 6 | O-L-M | .48** | .25** | 32 | Ac | .58** | .28** |
| 7 | Re | .28** | .03 | 33 | Se | .50** | .26** |
| 8 | Se | .16** | .06 | 34 | Se | .25** | .10 |
| 9 | H-F | .38** | .20** | 35 | N | .47** | .22** |
| 10 | Re | .61** | .28** | 36 | O-L-M | .31** | .03 |
| 11 | O-L-M | .62** | .35** | 37 | Ac | .12 | .03 |
| 12 | Ac | .67** | .30** | 38 | Se | .10 | .10 |
| 13 | Se | .08 | .06 | 39 | Ac | .31** | .19** |
| 14 | Re | .44** | .32** | 40 | H-F | .39** | .14* |
| 15 | N | .46** | .25** | | | | |
| 16 | Se | .49** | .34** | | | | |
| 17 | Se | .28** | .26** | | | | |
| 18 | Re | .39** | .46** | | | | |
| 19 | O-L-M | .13* | .08 | | | | |
| 20 | Se | .19** | .10 | | | | |
| 21 | N | .35** | .03 | | | | |
| 22 | H-F | .51** | .25** | | | | |
| 23 | Se | .20** | .11 | | | | |
| 24 | Re | .23** | .18** | | | | |
| 25 | O-L-M | .32** | .24** | | | | |
| 26 | N | .24** | .02 | | | | |

| AREA | |
|---|---|
| Nursing | .35** |
| Self | .54** |
| Home-Family | .42** |
| Responsibility | .59** |
| Others-Love-Marriage | .61** |
| Academic | .47** |

* Significant at .05 level

** Significant at .01 level

## Chapter 9

# Relationships Among Performance on LHSC, NSC, and NAI as Scored With The NES

This chapter is concerned with interrelationships of performances on the three tests, Luther Hospital Sentence Completions (LHSC), Nursing Sentence Completions (NSC), and Nurse Attitudes Inventory (NAI), Form I, all as scored with the Nursing Education Scale (NES). The circumstances surrounding the derivation and administration of these devices have been detailed in Chapters 2, 5, 6, 7, and 8.

## Results

### LHSC-NSC Correlations

The correlations involving NES scorings of the LHSC and NSC are given in Tables 9.1 and 9.2. Comparison of the results of these two tables may be somewhat misleading unless one takes into consideration the different number of measurements involved in the two sets of correlations. For example, in Table 9.1 (N = 99), a correlation coefficient (r) of .20 is required for significance at the .05 level of confidence whereas in Table 9.2 with a smaller number of measurements (N = 33), an (r) of .34 would be required for a similar level of significance. These same considerations must be applied to Tables 9.3 and 9.4. After taking this statistical consideration into account, the correlations of Tables 9.1 and 9.2 are quite similar and consistent. Three of the Areas Scores (Home and Family; Others-Love-Marriage; Academic) and Total Scores for the LHSC and NSC correlate significantly (.05 level) in both tables. The correlations involving the Area Score for Responsibility was significant at the .05 level in the computation involving the larger sample and closely approached significance in the other instance.

### LHSC-NAI Correlations

The correlations for the LHSC and NAI (Table 9.3) revealed significant inter-test correlations (.01 level) for Area Score for Self and Total Score.

### NSC-NAI Correlations

Four of the Area Scores (Nursing, Home-Family, Responsibility, and Academic) and the Total Score of these two tests were found to be correlated at the .05 level (Table 9.4).

## Discussion

It had been anticipated that consistencies would be noted among performances on the LHSC, NSC, and NAI inasmuch as these tests were similar in many ways and were all scored with the same NES key. It was also expected that the degree of the inter-test correlations might among other things reveal changes or stability in student attitude over a period of time or shifts in score because of the differences in the tests employed. In this regard, an evaluation of these results might provide information bearing on potential problem areas and counseling needs.

Significant relationships have been demonstrated between performance on the LHSC when administered via mail approximately six months prior to entering school and nursing school achievement after two years (Chapter 5). In addition, test-retest correlations involving all Area Scores and Total Scores of the LHSC demonstrated significant consistencies over the period of time from application to the first week of school (Chapter 5). This suggested that school performance might also be predicted from LHSC performances when administered under supervised conditions at the time of admission. This specific prediction will be evaluated fully when the 1966 performance on LHSC's administered during the first week at school is related to the student's 1969 graduation status.

There were significant correlations of Total Scores of pre-admission LHSC and first week NSC, and pre-admission LHSC with first week NAI. This finding supports the contention that first week NSC or NAI performance might be related to school achievement in the same manner as LHSC performance. These relationships are undergoing intensive evaluation at the present time (Chapters 6 and 7).

The results describing variations in consistencies among NES Area Scores from the different tests indicate the need to go beyond NES Total Score in obtaining a comprehensive picture of the attitudes and reactions related to success in nursing education. For while there are significant inter-test correlations among the Total Scores for the three tests, there is a lack of such consistency in regard to Area Scores. No Area Score correlates with its counterpart in all three instances (LHSC-NSC, NSC-NAI, and LHSC-NAI). However, in three areas (Home-Family, Responsibility, and Academic), there were significant correlations in two (LHSC-NSC, NSC-NAI) of the three possibilities. This might suggest that these attitudes are stronger than the others, becoming manifest despite substantial inter-test time intervals if the same (LHSC-LHSC) or similar (LHSC-NSC) sentence completion tests were used and over shorter periods of time if dissimilar tests (NSC-NAI) were employed. However, different tests administered with a long inter-test interval (LHSC-NAI) produce inconsistencies in Area Score results. It would seem that the student attitudes which are least likely to change are those involving home and family, personal responsibility, and education. It is of further interest to note that in Chapter 5 the scores in these same areas (Home and Family, Responsibility, and Academic) were the very ones strongly related to achievement status in nursing school. Student attitudes toward nursing and other people may be most susceptible to change. The significant NAI-NSC correlation involving nursing attitudes might suggest that these attitudes, while different from those expressed at the time of application, may be rather firmly established when the student is in school.

It may be that the LHSC results deriving from mailed pre-admission testing are particularly revealing in areas of importance to nursing education. The scores deriving from supervised first week testing may not be as useful as the pre-admission results regardless of the kind of test employed. The data developed in this aspect of the research are relevant to an observation made many times during the scoring of the tests involved in this research, namely the "refreshing naivete" and forthrightness of the student response to tests administered at the time of application. It was also noted that these were not as striking characteristics of student response to tests administered during the first week. Perhaps among other happenings, the supervised testing procedure, the experience of leaving home and the discovery of the realities of nursing school influenced the expression of attitudes. If this is the case, then perhaps pre-admission testing is to be recommended not only in identifying those who will experience trouble but also in obtaining information as to how this eventually might be offset. As has been indicated previously, these various hypotheses are to be tested on the basis of research both current and contemplated.

Table 9.1

CORRELATIONS OF TOTAL AND AREA SCORES OF NES-LHSC AND NES-NSC SCORINGS (N=99)

NES-LHSC SCORING

| NES-NSC | Areas | | | | | | | NES-NSC | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring | N | Se | H-F | Re | O-L-M | Ac | Total | Means | S. D. |
| Nursing | .13 | | | | | | | 9.01 | .95 |
| Self | | .06 | | | | | | 23.06 | 1.17 |
| Home-Family | | | .23* | | | | | 7.81 | .90 |
| Responsibility | | | | .23* | | | | 14.09 | 1.26 |
| Others-Love-Marriage | | | | | .20* | | | 11.49 | 1.17 |
| Academic | | | | | | .22* | | 10.22 | 1.24 |
| Total | | | | | | | .26** | 75.68 | 3.08 |
| NES-LHSC Means | 8.93 | 22.75 | 7.86 | 14.20 | 11.71 | 10.26 | 75.71 | | |
| S. D. | 1.00 | 1.31 | .81 | 1.25 | 1.19 | 1.10 | 2.88 | | |

* Significant at .05 level
** Significant at .01 level

Table 9.2

## CORRELATIONS OF TOTAL AND AREA SCORES OF NES-LHSC AND NES-NSC SCORINGS (N=33)

### NES-LHSC SCORING

| NES-NSC | Areas | | | | | | | NES-NSC | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring | N | Se | H-F | Re | O-L-M | Ac | Total | Means | S.D. |
| Nursing | .27 | | | | | | | 8.82 | 1.17 |
| Self | | .31 | | | | | | 22.61 | .92 |
| Home-Family | | | .55** | | | | | 7.79 | .77 |
| Responsibility | | | | .30 | | | | 14.03 | 1.31 |
| Others-Love-Marriage | | | | | .81** | | | 12.00 | 1.13 |
| Academic | | | | | | .51** | | 9.82 | 1.27 |
| Total | | | | | | | .63** | 75.06 | 2.93 |
| NES-LHSC Means | 8.76 | 22.27 | 7.94 | 13.94 | 11.61 | 9.76 | 74.27 | | |
| S.D. | 1.13 | 1.24 | 1.07 | 1.37 | 1.10 | 1.21 | 3.44 | | |

** Significant at the .01 level

### Table 9.3

### CORRELATIONS OF TOTAL AND AREA SCORES OF NES-NAI AND NES-LHSC SCORINGS (N=33)

NES-LHSC SCORING

| NES-NAI | Areas | | | | | | | NES-NAI | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring | N | Se | H-F | Re | O-L-M | Ac | Total | Means | S.D. |
| Nursing | .27 | | | | | | | 9.18 | 1.14 |
| Self | | .35** | | | | | | 21.27 | 1.76 |
| Home-Family | | | .29 | | | | | 8.00 | 1.02 |
| Responsibility | | | | .22 | | | | 14.00 | 1.02 |
| Others-Love-Marriage | | | | | -.08 | | | 12.06 | 1.13 |
| Academic | | | | | | -.03 | | 9.85 | .89 |
| Total | | | | | | | .34** | 74.45 | 3.24 |
| NES-LHSC Means | 8.76 | 22.27 | 7.94 | 13.94 | 11.61 | 9.76 | 74.27 | | |
| S.D. | 1.13 | 1.24 | 1.07 | 1.37 | 1.10 | 1.21 | 3.44 | | |

** Significant at the .01 level

### Table 9.4

### CORRELATIONS OF TOTAL AND AREA SCORES OF NES-NSC AND NES-NAI SCORINGS (N=162)

| | NES-NSC SCORING | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NES-NAI Scoring | N | Se | H-F | Re | O-L-M | Ac | Total | NES-NAI Means | S.D. |
| Nursing | .19* | | | | | | | 9.12 | 1.16 |
| Self | | .15 | | | | | | 21.31 | 1.79 |
| Home-Family | | | .26** | | | | | 8.14 | .99 |
| Responsibility | | | | .18* | | | | 14.00 | 1.40 |
| Others-Love-Marriage | | | | | .13 | | | 12.07 | .91 |
| Academic | | | | | | .34** | | 9.98 | 1.08 |
| Total | | | | | | | .32** | 76.64 | 3.43 |
| NES-NSC Means | 9.25 | 22.76 | 8.03 | 14.15 | 11.83 | 10.08 | 76.10 | | |
| S.D. | .97 | 1.41 | .98 | 1.34 | 1.07 | 1.15 | 3.35 | | |

* Significant at the .05 level

** Significant at the .01 level

## Chapter 10

## Discriminant Function and the Prediction of Nursing Student Achievement

There has long been interest in developing a practical and efficient procedure which would enable researchers and nursing schools to use several measures simultaneously in predicting achievement in nursing education. This approach presumes first of all the development of single measures which are related to success and failure in nursing school. Such measures might include aptitude and attitude scores, rank in high school graduating class, and intelligence scores. Research in this field has indicated that there is considerable variation from school to school in the extent to which these measures are related to success in nursing education (Munday and Hoyt, 1965). It also seems reasonable to assume that valid measures for a given school when used in combination could provide more valid predictions of student performance than could any one of the measures used singly (Lavin, 1965).

The purpose of this chapter is to illustrate the application of a statistical procedure called discriminant function (McNemar, 1962, p. 204) to this problem of combined measures. In Phase II of this research ten measures were selected for inclusion in this analysis on the basis of some demonstrated relationship to achievement status. It should be noted that the original analyses involved one variable at a time. Each of the variables included in this analyses were found to discriminate to a degree among the achievement groups although some of the variables discriminated at a low level of efficiency.

The measures were: 1) MMPI Hysteria (Hy) scale score, 2) MMPI Paranoia (Pa) scale score, 3) MMPI Psychasthenia (Pt) scale score, 4) MMPI Hypomania (Ma) scale score, 5) NES-LHSC Total score, 6) Self NES-LHSC-Area score, 7) Home-Family NES-LHSC-Area score, 8) Responsibility NES-LHSC-Area score, 9) Others-Love-Marriage NES-LHSC-Area score, and 10) Academic NES-LHSC-Area score. A special computer program was used (Dixon, W. J., 1965, p. 196) to execute a discriminant function analysis of these measures to analyze their power to discriminate the achievement status groupings at each of the three schools separately and for all three schools combined. The analysis yields the summary statistic $D^2$ which tests the power of the combined variables to discriminate among the achievement levels. The $D^2$'s were significant in the analysis for each school and for all three schools combined. An illustration of the discriminative weights is given in the following example which was determined on the basis of end-of-course performance by the entire sample of 445 applicants to the three schools:

| Measure | Achiever | Underachiever | Failure |
|---|---|---|---|
| MMPI HY | 0.93196 | 0.91909 | 0.93739 |
| MMPI Pa | 0.57489 | 0.55169 | 0.59590 |
| MMPI Pt | 0.63953 | 0.60279 | 0.62157 |
| MMPI Ma | 0.45411 | 0.44991 | 0.46047 |
| NES-LHSC Total | 4.44511 | 4.50836 | 4.57453 |
| NES-LHSC Se | 4.81873 | 4.84646 | 0.79798 |
| NES-LHSC H-F | 0.39843 | 0.56846 | 0.79798 |
| NES-LHSC Re | 1.26186 | 1.37490 | 1.39586 |
| NES-LHSC O-L-M | 1.98934 | 1.77792 | 1.76112 |
| NES-LHSC Ac | 3.23405 | 3.29900 | 3.35328 |
| Constant | -325.20047 | -327.60368 | -340.11630 |

To use this weighting for an individual would require the multiplication of each of the weights by the score achieved on each measure. For example, if a student had an MMPI Hy T-score of 55, this would require a multiplication of this number by each of the weights of the first row:

55 x 0.93196    55 x 0.91909    55 x 0.93739

then assuming an MMPI Pa T-score of 50:

50 x 0.57489    50 x 0.55169    50 x 0.59590

This procedure would be followed for all ten measures. The resulting products would then be summed vertically for the achiever, underachiever, and failure columns respectively. The sum would then be added algebraically to the constant at the bottom of the column. Each student would then have three numbers describing the probability of her being an achiever, an underachiever, or a failure. Again, as an illustration, five students' totals are listed below:

| Student | Achiever | Underachiever | Failure | Largest Probability |
|---|---|---|---|---|
| 1 | 0.58873 | 0.24695 | 0.16432 | Achiever |
| 2 | 0.40394 | 0.29080 | 0.30526 | Achiever |
| 3 | 0.43473 | 0.27508 | 0.29019 | Achiever |
| 4 | 0.17429 | 0.38299 | 0.44272 | Failure |
| 5 | 0.32318 | 0.42960 | 0.24723 | Underachiever |

Identification of the largest probability is a simple operation at this stage. The achievement category having the largest numerical value is the category that the individual has the greatest chance of being in. For the five students used in the illustration the identification coincided in each case with the actual status at the end of training. However, it should be noted that in this analyses the weights were applied to the same sample from which they were derived. No cross-validation is implied.

This type of analysis would be quite laborious and intricate for hand calculation. However, analysis utilizing a computer is relatively inexpensive and requires less than a minute.

Application of this discriminant function to data at Luther Hospital School of Nursing yielded a $D^2$ of 60.74 which is significant at the .01 level. The weights derived from the analysis were then used to make individual identifications of achievement status. These results are given in Table 10.1. Of the 50 students whose true status was achiever, 34 were identified correctly while 11 were identified as underachievers and 5 as failures. Of the 43 failure cases, 28 were identified correctly by discriminant function.

On the basis of prior achievements of students at Luther one could expect, by random guessing, to identify correctly approximately 40 per cent of those who would be categorized as achievers, 20 per cent of the underachievers, and 40 per cent of the failures. By means of discriminant function the correct identification is raised to 68 per cent for achievers, 41 per cent for underachievers, and 65 per cent for failures. This is summarized in Table 10.2.

The application of discriminant function to data from Holy Family School of Nursing is shown in Table 10.3. This discriminant function analysis yielded a $D^2$ of 33.41 which is significant at the .05 level. The discriminant function analysis for Holy Family School of Nursing revealed unusual success in identifying individuals in the underachiever and failure categories. The discriminant function lead to 71 per cent accurate identifications of underachievers and 66 per cent accuracy for failures whereas prior experience would have lead to 15 per cent accuracy for underachievers and 25 per cent accuracy for failures. This analysis is summarized in Table 10.4.

Application of the discriminant function analysis with students at the Madison General School of Nursing is given in Table 10.5. The $D^2$ of 34.26 is significant at the .05 level. Using the discriminant function there is 40 per cent accuracy in identifying achievers whereas guessing on the basis of previous experience would correctly identify about 46 per cent. However, in the underachiever and failure categories the discriminant function is significantly better than prior experience (Table 10.6). The function identifies 49 per cent of underachievers correctly and 48 per cent of failures while prior experience identifies at the significantly lower levels of 18 and 36 per cent respectively.

Application of the discriminant function analysis to the combined group of 445 students at the three schools yielded a $D^2$ of 63.81 which is significant at the .01 level. The comparison of actual and discriminant function status is given in Table 10.7. Thus, 101 of the 219 achievers were identified accurately, 28 of the 79 underachievers, and 73 of the 147 failures. The comparative accuracy is given in Table 10.8. The discriminant function correctly identifies 46 per cent of achievers while prior experience would lead to an expectation of 49 per cent accuracy. The function identifies

37 per cent of underachievers accurately while prior experience would only identify only 18 per cent correctly. Finally, discriminant function identifies 50 per cent of the failures correctly while prior experience would be expected to achieve only about 33 per cent accuracy.

The discriminant function for the three schools combined obviously yields less accuracy in identifying achievement than can be obtained with separate functions for each school. The identifications at Luther and Holy Family afford much higher accuracy for each of the three achievement groups. The accuracy of identification at Madison General is lower than for the other two schools and approximately at the same level for the three schools combined. In essence, it seems safe to conclude that if it is at all possible, the discriminant function analysis should be done for individual schools.

It should be noted again that these percentages of accuracy for discriminant function weighting constitute a retrospective identification of student categories involving the same students whose performances were utilized in determining the discriminant functions. Thus, the analysis is not a cross-validation.

Nevertheless, the method would appear to offer some exciting possibilities as a practical means of combining the prediction power of variables which have been found individually to have power to predict achievement levels. The discriminant function also affords the advantage of specific prediction to a diagnostic category as opposed to the regression analysis which leads to prediction of scores on a single continuum. Finally, the discriminant function permits analysis and use of variables which are not correlated in a linear fashion with the criterion (achievement levels in this study).

It seems unlikely that single variables or single test scores will ever be found which will accurately predict achievement status. To be sure, cognitive measures such as IQ or Scholastic Aptitude Test scores, or high school rank are the most successful predictors of achievement in a wide variety of school situations. But frequently they account for no more than 30 to 50 per cent of the variance in a criterion. Hence it is hoped that personality and attitude variables may be used, in an additive fashion, to improve the accuracy of prediction to a practical level of efficiency.

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Table 10.1

ACTUAL ACHIEVEMENT COMPARED TO ACHIEVEMENT IDENTIFIED BY DISCRIMINANT FUNCTION FOR 110 STUDENTS AT LUTHER HOSPITAL SCHOOL OF NURSING

| Actual Achievement | Predicted Achievement | | | |
|---|---|---|---|---|
| | Achiever | Underachiever | Failure | Total |
| Achiever | 34 | 11 | 5 | 50 |
| Underachiever | 6 | 7 | 4 | 17 |
| Failure | 8 | 7 | 28 | 43 |
| Total | 48 | 25 | 37 | 110 |

Table 10.2

ACCURACY OF IDENTIFICATION USING PAST EXPERIENCE OR DISCRIMINANT FUNCTION ANALYSIS AT LUTHER HOSPITAL SCHOOL OF NURSING

| Actual | Per cent Accurate | |
|---|---|---|
| | By Prior Student Experience | By Discriminant Function |
| Achiever | 40 | 68 |
| Underachiever | 20 | 41 |
| Failure | 40 | 65 |

Table 10.3

ACTUAL ACHIEVEMENT COMPARED TO ACHIEVEMENT IDENTIFIED BY DISCRIMINANT FUNCTION FOR 88 STUDENTS AT HOLY FAMILY HOSPITAL SCHOOL OF NURSING

| Actual Achievement | Predicted Achievement<br>Achiever | <br>Underachiever | <br>Failure | Total |
|---|---|---|---|---|
| Achiever | 36 | 11 | 9 | 56 |
| Underachiever | 3 | 12 | 2 | 17 |
| Failure | 2 | 3 | 10 | 15 |
| Total | 41 | 26 | 21 | 88 |

Table 10.4

ACCURACY OF IDENTIFICATION USING PAST EXPERIENCE OR DISCRIMINANT FUNCTION ANALYSIS AT HOLY FAMILY HOSPITAL SCHOOL OF NURSING

| Actual | Per cent Accurate<br>By Prior Student Experience | <br>By Discriminant Function |
|---|---|---|
| Achiever | 60 | 64 |
| Underachiever | 15 | 71 |
| Failure | 25 | 66 |

## Table 10. 5

## ACTUAL ACHIEVEMENT COMPARED TO ACHIEVEMENT IDENTIFIED BY DISCRIMINANT FUNCTION FOR 247 STUDENTS AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Actual | Predicted Achievement | | | |
|---|---|---|---|---|
| Achievement | Achiever | Underachiever | Failure | Total |
| Achiever | 45 | 35 | 33 | 113 |
| Underachiever | 12 | 22 | 11 | 45 |
| Failure | 29 | 17 | 43 | 89 |
| Total | 86 | 74 | 87 | 247 |

## Table 10. 6

## ACCURACY OF IDENTIFICATION USING PAST EXPERIENCE OR DISCRIMINANT FUNCTION ANALYSIS AT MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| | Per cent Accurate | |
|---|---|---|
| Actual | By Prior Student Experience | By Discriminant Function |
| Achiever | 46 | 40 |
| Underachiever | 18 | 49 |
| Failure | 36 | 48 |

Table 10.7

ACTUAL ACHIEVEMENT COMPARED TO ACHIEVEMENT IDENTIFIED BY DISCRIMINANT FUNCTION FOR THREE SCHOOLS OF NURSING COMBINED

| Actual Achievement | Predicted Achievement | | | |
|---|---|---|---|---|
| | Achiever | Underachiever | Failure | Total |
| Achiever | 101 | 61 | 57 | 219 |
| Underachiever | 29 | 28 | 22 | 79 |
| Failure | 43 | 31 | 73 | 147 |
| Total | 173 | 120 | 152 | 445 |

Table 10.8

ACCURACY OF IDENTIFICATION USING PAST EXPERIENCE OR DISCRIMINANT FUNCTION ANALYSIS FOR THREE SCHOOLS OF NURSING COMBINED

| | Per cent Accurate | |
|---|---|---|
| Actual | By Prior Student Experience | By Discriminant Function |
| Achiever | 49 | 46 |
| Underachiever | 18 | 37 |
| Failure | 33 | 50 |

## Chapter 11

# Empathy Inventory (EI)*

## The Reasons for Drop-Out from Nursing School

In attempting to understand and alleviate nursing student failure, many personal, educational, and intellectual factors have been investigated (Taylor, 1963). The research in this area has concentrated in large part upon the nursing students with less attention to the nursing school faculties and the psycho-social climate within the schools which may contribute to student failure or success. These factors involving the faculty and school might become manifest through varying personal, educational, and clinical demands upon the students (Thurston, Brunclik and Finn, 1962).

In Figure 10.1 a schematic representation has been made of factors associated with success or failure in nursing school. It is an attempt to conceptualize the unique and complex interaction of the predispositions and precipitations which determine the success or failure of the individual nursing student. This diagram represents the interaction of the personal resources of the individual (predispositions) with the resources and demands of the nursing school and its faculty members (precipitations).

Prediction of success in nursing education may require increasing attention not only to the individual predispositions of students to succeed or fail, but also to both the immediate and long-range precipitating circumstances within schools of nursing which may result in failure or success of the students. The measurement of these predispositions, precipitations, and the nature of the interactions among them pose interesting and challenging methodological problems to the researcher in this field.

## Individual Differences Among Faculty Members

Even though graduate nurses are quick to cite examples illustrating differential effectiveness of their previous instructors, little research has been undertaken to measure the impact of the individual faculty member upon the nursing student and her education. Nevertheless there is evidence of increasing interest in this area. Fox (1964) reported a relationship between the satisfaction of nursing school faculty members and the satisfaction of their students. Some of the work in non-nursing education may also provide insights concerning problems in nursing education. Rempel and Bentley (1964), using factor analysis, have defined ten characteristics of teachers, particularly in the area of morale, which relate to their effectiveness as teachers. Similarly Amidon and Flanders (1963) have identified specific

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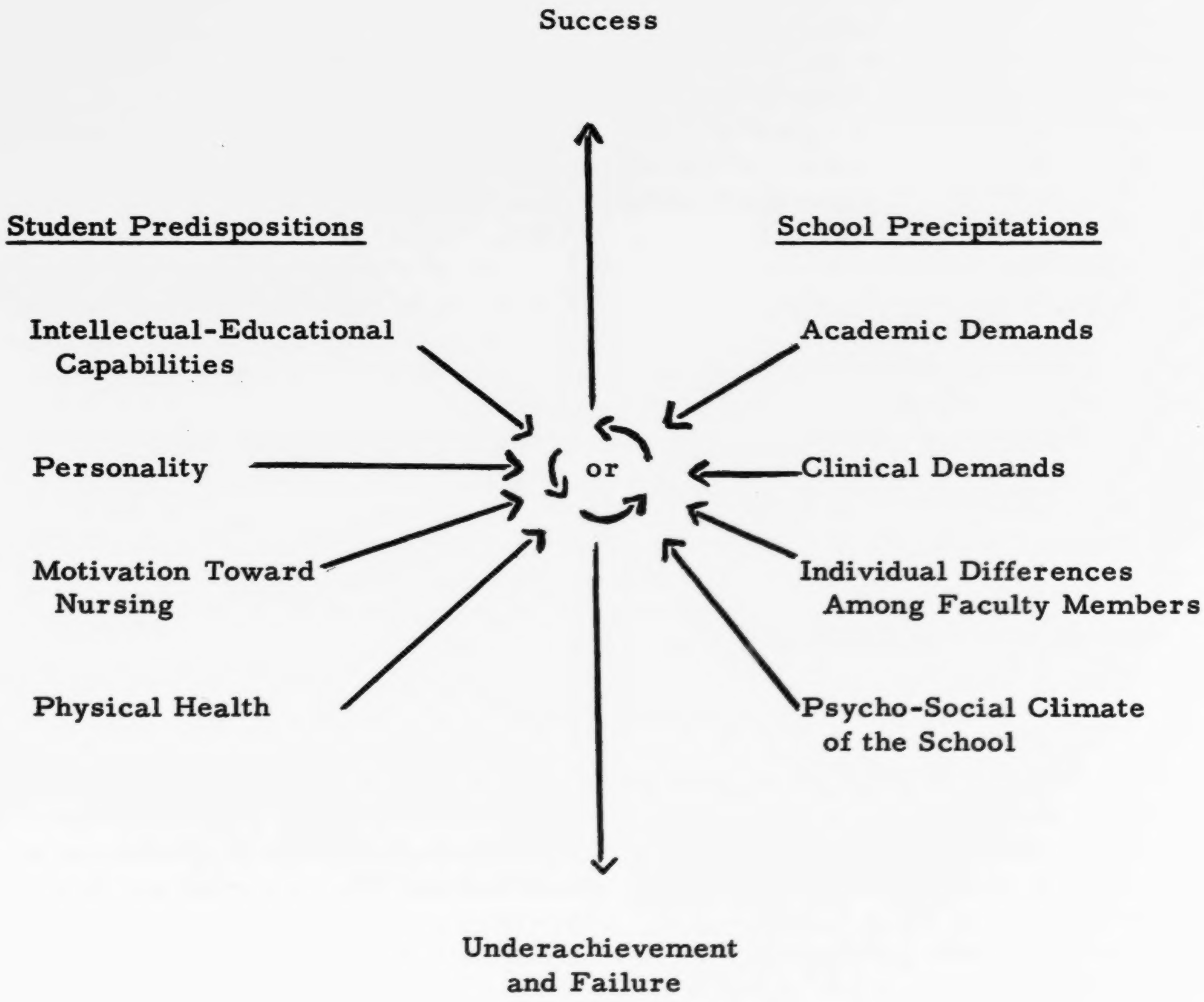
*An edited form of this chapter appeared as: Brunclik, H. L., Thurston, J. R., and Feldhusen, J. R., "Empathy Inventory", Nursing Outlook, in press.

Figure 11.1

Predispositions and Precipitations Involved in Success or Failure of Student Nurses


Success
Student Predispositions
School Precipitations
Intellectual-Educational Capabilities
Academic Demands
Personality
or
Clinical Demands
Motivation Toward Nursing
Individual Differences Among Faculty Members
Physical Health
Psycho-Social Climate of the School
Underachievement and Failure

teacher behaviors which relate to student achievement. It is interesting to note, however, that Amidon and Flanders also report that the broader personality characteristics of flexibility and openness to feedback from students may be major determinants of the teacher's instructional effectiveness.

Studies of the Minnesota Teacher Attitudes Inventory (MTAI) as a predictor of teacher performance, student learning, and other aspects of the teacher-student relationship have been numerous. In two studies by Leeds (1950, 1952) with teachers of grades four to six and in a study by Callis (1953) of teachers in grades four to ten it was found that rating of the teacher-pupil rapport by pupils, principals, and outside observers were correlated to a significant degree with favorable attitudes as revealed by the MTAI. However, in a study by Chappell and Callis (1954) with adult instructors and Naval Air Training Students, the instructors' attitudes toward teaching and students were unrelated to ratings of their teaching competence.

Durflinger (1963) in a review of some of the more recent MTAI studies reported equivocal findings. He also indicated that there is a need for new instruments in this area because the MTAI measures only a limited number of teacher attitudes. It does not appear that the MTAI has been used in evaluations of nursing school faculties.

Studies of personality factors which may relate to teaching effectiveness were reviewed by Getzels and Jackson (1963). They concluded that little is known yet about the nature and measurement of teacher personality and its relationship with teaching effectiveness. They note that personality is hard to define, problems of instrumentation are ever present, and criteria for judging teacher effectiveness are not yet well established.

Studies of student ratings of instructors provide still another way of assessing teacher effectiveness. Remmers (1963) reviewed numerous research studies on instructor ratings, many of which had used the Purdue Rating Scale for instruction (Remmers and Elliott, 1960). He concluded that student evaluation is a useful, convenient, reliable, and valid means of self-assessment and self-improvement for teachers.

Evidence from these studies and other research in progress indicates that it might be possible to specify and measure the elements of nursing school faculty members' personalities, attitudes, and teaching behavior which might be crucial in affecting student achievement. While the Minnesota Teacher Attitude Inventory could probably be used with revisions to make it suitable for nursing instructors, there is evidence to suggest that the "custom-making" of tests for a particular purpose yields more valid results than using tests which were designed originally to perform other functions (Thurston and Brunclik, 1965).

## Empathy

Among the dimensions of personality, attitudes, and behavior, the concept of "empathy" is probably an important but neglected variable which should be studied in relation to the effectiveness of nursing school faculty members. Empathy may be defined as "the imaginative projection of one's own consciousness into another being" or in effect "I see how you feel." Downey defined empathy in this fashion: "Through subtle imitation we assume an alien personality, we become aware of how it feels to behave thus and so, then we read back into the other person our consciousness of what his pattern of behavior feels like" (1929, p. 177). Gardner Murphy describes empathy as "experiencing within oneself what actually belongs to other perceived persons or objects" (1947, p. 496). Individuals differ in their ability to empathize with others and these differences appear to be related to their ability to understand and teach others. Combs (1965) suggested that "a false or inaccurate conception of what his students are like provides the teacher with an inadequate basis for making decisions and directing the learning process". Remmers (1960) hypothesized that there is a relationship between the ability of teachers to empathize with their students and the teacher's influence upon the personality development of students.

Kerr (1947) developed an instrument called "The Empathy Test" and carried out numerous reliability and validity studies with it. He found that performance on the Empathy Test was found to be related to functioning in industry (Van Zeist, 1952), sales (Tobolski and Kerr, 1952) and clinical practice (Alden, 1954).

In the view of Rogers, a psychotherapist is most likely to be successful when he accepts the client as a person of unconditional worth, attempts to understand the feelings and communications of the client as they seem to the client, and to try to "convey something of this empathic understanding to the client" (Rogers and Dymond, 1954, p. 4). The Q-sort technique which is often used to evaluate client-centered therapy would seem to lend itself well to an investigation of empathy e. g. correlations of self-sort by client with the sort by the therapist as he thinks the client would sort them. Luft (1949), Kell (1950), and Bown (1954) have investigated the nature of the psychotherapeutic relationships with this technique.

Dixon and Morse (1961) developed a theoretical rationale for empathy as a predictor of teaching performance. They defined empathy as involving two functions: (1) the ability to intellectually perceive how another person will respond and (2) a highly accepting relationship between student and teacher marked by positive feelings toward one another. The latter they regard as the important element of empathy. Results from their research indicate that the teacher's level of empathy is related to students' ratings of his ability as a teacher and to his self-concept as a teacher, but is not related to several personality dimensions which were hypothesized to be correlates of empathy.

## The Purpose of This Study

The present research was concerned with the development of a technique specifically for the assessment of individual differences among nursing school faculty members in their ability to empathize with students. Empathy was defined for this study as the ability to know what students consider to be preferred responses in the area of attitudes and emotional reactions. Substantial understanding of a student's attitudes and perception is probably influential in determining the nature of faculty-student relationships -- and hence student performance -- in the classroom, on the hospital ward, in formal counseling sessions, and in casual encounters.

In addition, individual differences in empathic ability among faculty members probably affect interactions among instructors and this constitutes a factor contributing to the overall psycho-social climate of the school, another of the precipitating factors suggested previously. It seems reasonable to hypothesize that faculty members who lack understanding of their students might also lack understanding of their fellow instructors and thus encounter more interpersonal difficulties in their relationships with them. Such difficulties would in turn probably have an adverse effect on student achievement.

## Empathy Inventory Development

In connection with the development of a special multiple choice personality instrument called the Nurse Attitudes Inventory (NAI), an extended investigation was made into the types of completions that a nursing student believes an applicant should make in response to sentence stems if the applicant were interested in creating a favorable impression ("faking good") on the admissions committee of a nursing school. The purpose of that inquiry was to develop information so that this "faking" tendency could be 1) offset in choosing the NAI multiple choice foils and 2) taken into consideration in evaluating the results of this attitude inventory. In the course of this analysis, it became clear that this data could also be used in the development of an inventory for exploring differences in empathic ability of faculty members. Chapter 7 gives a detailed account of the procedures involved in this analysis.

In choosing stems and completions for the Empathy Inventory, the only completions used were those which were at least two mean ranks apart, e.g. 7.4 and 5.3, 6.8 and 4.4, 2.5 and 5.3. In other words, those completions selected had been accorded ranks by nursing students which were quite different from one another. One completion was ranked much higher than the other by students in terms of its making a favorable impression on a nursing faculty.

Of the 140 sentence stems available, seventy-five were selected for the Empathy Inventory. The avoidance of duplication of stems as well as lack of variation in "faking good" rankings among some completions were prime considerations in this selection. The scoring key for the Empathy Inventory is based on "correct" answers which in each case is the one with the lower mean rank, the sentence completion indicated by nursing students as the one an applicant should pick if she wished to make a good impression on a nursing school admissions committee. The following are three items from the Empathy Inventory:

When I go to nursing school, my family will . . . . .
  a. miss me
  b. have extra expense
Other people think of me as . . . . .
  a. the girl with a lot of pep
  b. being friendly
When a girl doesn't finish nurses training, she . . . . .
  a. isn't suited for it
  b. must have a good reason

These excerpts from the instructions indicate what is to be done by the person taking the inventory:

> You are to put yourself in the place of a student attending a school of nursing. You are given a series of choices involving completions to sentence beginnings. In each instance you are to choose the completion of the two listed which you feel would be selected by this student as the one an applicant to a nursing school should choose if she, the applicant, wanted to show herself off to the best possible advantage.

## Normative Standards

Nursing schools in the state of Wisconsin and those schools in the Luther Hospital Research Project were given the opportunity to participate in the standardization of the Empathy Inventory. Thirty-five nursing schools agreed to cooperate and the majority of faculty members at these schools completed the Empathy Inventory forms. The standardization was restricted to females. Each participating faculty member was promised that her performance would be known only to her. While this "voluntary" approach might introduce problems of selectivity, there seemed to be no alternative which would afford as complete and representative a sample. The Empathy Inventories completed by faculty members were differentiated on the basis of the member's association with an associate degree, diploma, or baccalaureate program.

In order to provide additional standards by which to judge individual performance, the Empathy Inventory was administered to male and female junior and senior university students enrolled in a mental hygiene course, and to female nursing students at a diploma school. The norms established on the basis of this testing are reported in percentile form in Table 11.1. The percentiles indicate the performance of individuals in comparison with others in each of the sub-groups. For example an Empathy Inventory score of 60 would be equivalent to a percentile rank of 90 if compared with male university students, of 72 if compared with female university students and only 50 if compared with the performance of nursing students.

## Discussion

Inasmuch as the research and development of the Empathy Inventory has just reached the stage of providing a useable form and the production of norms, a discussion of validity and reliability must await further research. However, several observations can be made. The scores of the nursing students were expectedly high inasmuch as their responses were based on instructions which were a restatement of those which served as the basis for the derivation of the Empathy Inventory, namely select the response which would be more acceptable to an admission committee if one wanted to make a good impression and be accepted. However, it should be pointed out that these students were enrolled in a school that did not participate in the original derivation. Thus, their performance also constitutes a cross-validation of the student performance which was used in selecting items and completions.

It had been expected that the performance of faculty members would lie somewhere in between that of the nursing and university students. In the final analysis, however, the level of accuracy of faculty members and male university students in detecting the responses preferred by nursing students was about equal with the female university students providing evidence of superiority to either of these groups. These findings suggest that the nursing faculty members are no more adept than people who are not even associated with a nursing education program in judging the view which would be taken by a nursing student. Certainly these results should be regarded as tentative and subject to verification with other kinds of non-professional groups.

## Possible Uses

For the present the major use of the Empathy Inventory should be in research on its reliability and validity for various purposes in nursing education. However, the Empathy Inventory should have potential for use in a number of nursing education functions. The interested faculty member might wish to take the Empathy Inventory to determine the degree of her empathy -- as defined by the test -- in comparison with other nursing school faculty members. The nursing schools might wish to utilize the test as an in-service teaching device or, pending affirmative research findings, for the assignment of counseling responsibilities to faculty members. As indicated previously, the Empathy Inventory might be a useful research tool in exploring the role of individual faculty members and/or schools in precipitating underachievement, withdrawal, and failure of nursing students.

In a review of research on college teaching, McKeachie (1963, p. 157) concludes that when an instructor is aware of individual differences among students her teaching improves. Awareness of individual differences in student perception may be shown by faculty performance on the Empathy Inventory. Thus, it is a tenable hypothesis that good performance on the

Empathy Inventory should be correlated with success in teaching because the high score on the Inventory reflects awareness of one kind of individual difference in students.

Certainly it seems likely that empathy with students or discernment of students' points of view may be an important factor affecting the success of nursing instructors in their efforts to help students learn. Studies of instructor effectiveness have often attempted some kind of global evaluation of the instructor. Newer concepts of teaching are likely to stress the multiple or complex nature of teaching and its outcomes. Thus, it may be necessary to try to determine which aspects of instructor behavior and what kinds of learning may be affected by the instructor's ability to emphathize. The faculty member's empathic ability would seem to be related to her capacity for counseling students regarding personal and educational problems; understanding the motives, attitudes, and reactions of individual students as a guide to individualizing instruction; establishing rapport with a whole class in order to motivate them to learn the subject matter; and producing learning of good attitudes toward desirable nursing practices.

Much research will be needed to establish the relationship of Empathy Inventory performance by nursing instructors to various aspects of teaching and counseling in a nursing school. While the results of such research could be uniquely useful to nursing schools in relation to problems of selection, training, and in-service education of nurses, the methods used and results obtained could also have important implications in other areas of instruction and in teacher education.

## Research Involving the Empathy Inventory

In an unpublished study, Lucas, Proctor, and Jirsa (1966) reported no significant correlation between MTAI and EI performances. This suggests that the factors associated with "good teacher attitudes" as described by MTAI performance may be quite different from those related to the empathic understanding of nursing students.

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Table 11.1

EMPATHY INVENTORY (EI) SCORES AND PERCENTILES FOR DIFFERENT GROUPS

| EI Scores | Percentiles | | | | | |
|---|---|---|---|---|---|---|
| | Students | | | Nursing School Faculty Members | | |
| | University | | Nursing | Associate Degree Program | Diploma Program | Baccalaureate Program |
| | Male (N=62) | Female (N=96) | (N=45) | (N=27) | (N=234) | (N=108) |
| 70 | | | | | | |
| 69 | | | | | 99 | |
| 68 | | | | | | |
| 67 | | | | | | |
| 66 | | 99 | | | 98 | 99 |
| 65 | 99 | 97 | | 99 | 97 | 98 |
| 64 | 97 | 93 | 99 | 96 | 96 | 97 |
| 63 | | 88 | 93 | 89 | 93 | 92 |
| 62 | 96 | 85 | 82 | 85 | 91 | 89 |
| 61 | 94 | 80 | 71 | 81 | 86 | 88 |
| 60 | 90 | 72 | 58 | 74 | 82 | 82 |
| 59 | 85 | 68 | 42 | 67 | 76 | 74 |
| 58 | 78 | 58 | 33 | 63 | 68 | 67 |
| 57 | 68 | 53 | 27 | 56 | 63 | 56 |
| 56 | 62 | 44 | 20 | 52 | 56 | 48 |
| 55 | 56 | 37 | 13 | 45 | 48 | 45 |
| 54 | 43 | 28 | | 41 | 44 | 38 |
| 53 | 38 | 21 | 11 | 37 | 38 | 33 |
| 52 | 35 | 15 | 4 | 31 | 32 | 29 |
| 51 | 30 | 12 | | 25 | 28 | 26 |
| 50 | 27 | 10 | | | 25 | 22 |
| 49 | 24 | 8 | | 22 | 20 | 19 |
| 48 | 22 | | | | 18 | 17 |
| 47 | 16 | | | 19 | 15 | 13 |
| 46 | 13 | 7 | | 11 | 11 | 11 |
| 45 | 8 | 4 | | | 10 | 10 |
| 44 | | 2 | | | 9 | 7 |
| 43 | | 1 | 2 | | 8 | 6 |
| 42 | 5 | | | | 5 | 5 |
| 41 | | | | 8 | 4 | 4 |
| 40 | 3 | | | | 3 | 3 |
| 39 | 1 | | | | 2 | 1 |
| 38 | | | | | 1 | |

# Chapter 12

## Summary of Phase I and II

Approximately one out of three students entering nursing education fails to graduate (Tate, 1961). This high failure-withdrawal rate poses serious problems to a nation faced with a severe shortage of qualified nurses. A report from the Surgeon General (1963) made recommendations to provide a yield of 53,000 graduates per year by 1969. The high rate of withdrawal from nursing schools would seem to constitute a major factor in determining whether or not this goal can be reached (Brunclik and Thurston, 1965).

In attempting to understand and alleviate the problem of nursing student failure, many personal, educational, and intellectual factors have been investigated. After a review of research on the prediction of success in nursing education, Taylor (1963) concluded that scholastic grade point averages and scores from intelligence and achievment test batteries are the most accurate predictors. Taylor suggested that the usual psychological measures of motivation, interest, and personality of student nurses fail to contribute much to the prediction of their success or failure.

### Phase I

On the basis of the recommendations of an authority in the field of nursing research (Farrell, 1954) and some reported success in prediction through the use of projective techniques (Mindess, 1957), a decision was made to construct and validate a semi-projective device, the Luther Hospital Sentence Completions (LHSC). This test was designed for the specific purpose of evaluating attitudes and emotional reactions believed by experienced nurses and authorities in the field to be vital to good nursing. The development of this 90-item form has been described elsewhere (Thurston and Brunclik, 1963). A Nursing Education Scale (NES) was then developed to allow for scoring of LHSC responses and ultimately a prediction of the likelihood of success or prospective nurses. Phase I of the Luther Hospital Research Project was devoted primarily to the construction and validation of the LHSC as scored with the NES, *Preliminary Form*. Also studied were the relationships between nursing school achievement and performance on the NLN Pre-Nursing and Guidance test (PNG), the Minnesota Multiphasic Personality Inventory (MMPI), and the Rotter Incomplete Sentence Blank (ISB).

The major Phase I (Thurston and Brunclik, 1965) findings were as follows: (1) Cross-validation of the LHSC as scored with the NES, *Preliminary Form*, revealed significant differentiations between achievers and failures, but not between underachievers and failures nor between achievers and underachievers; (2) There were few significant relationships noted between MMPI performance and achievement groupings; (3) There were no significant relationships demonstrated between Rotter ISB performance and achievement groupings; (4) A significant difference between schools was noted in terms of Rotter ISB scores; and (5) On the PNG, underachievers scored higher than achievers or failures who, in turn, scored higher than rejects (those not admitted).

## Phase II

Phase II of this research was in large part a replication of Phase I. Specific aims of Phase II were:

1. To conduct a cross-validation of the Nursing Education Scale (NES), a revision of NES, Preliminary Form, for scoring of the LHSC in terms of identifying prior to admission:
    a) those students who will graduate after working up to their full level of capability (Achievers)
    b) those students who will fail to profit fully from their course of instruction even though they will probably graduate (Underachievers)
    c) those students who will fail or withdraw from the nursing school program (Failures);
2. To re-assess the extent to which the MMPI could identify prior to admission those applicants who would ultimately be achievers, underachievers, or failures;
3. To evaluate again the relationship of pre-admission Rotter ISB performance to later status of students as achievers, underachievers, or failures.

In this phase there was the opportunity to conduct two cross-validations of NES-LHSC scoring, one involving a new student population from schools which had served in the derivation and initial cross-validation of the NES, Preliminary Form, and one involving a student population from a school that had not participated in either of these endeavors.

In addition to evaluating the relationship of NES score *per se* to achievement status, this score was broken down into six attitudinal area scores: Nursing, Self, Home-Family, Responsibility, Others-Love-Marriage, and Academic. Each score was derived from NES scoring of LHSC stems eliciting responses relating to these areas.

## Method

Three schools of nursing participated in Phase II: Luther Hospital School of Nursing (Luther), Eau Claire, Wisconsin; Holy Family Hospital School of Nursing (Holy Family), Manitowoc, Wisconsin; and Madison General Hospital School of Nursing (Madison General), Madison, Wisconsin.

Personality Measures Every applicant submitting a formal application to any of these three schools was evaluated by means of a mailed test packet, which included three test envelopes, a direction sheet, and a large envelope for return mailing. The first test envelope contained the LHSC, the second the Rotter ISB, and the third the MMPI. The direction sheet instructed students to proceed independently: to complete the LHSC first, put it back in the envelope, seal it, go on to the Rotter ISB in a similar fashion and then go on to the MMPI. When all three tests were finished, the applicant was instructed to place all three envelopes in the large envelope and return it to the school to which she had applied.

Evaluation Committees The participating schools were responsible for the selection of faculty committees to evaluate each student. Each committee was composed of five faculty members who had been associated with a specific student, and who had direct personal knowledge of her performance for at least three months. Committee membership varied from student to student.

Achievement Ratings The achievement rating (Achiever or Underachiever) was established by the faculty committee after the student had been in school for approximately 18 months. Failures were designated by a review of school records. Achievement status was defined as follows:

a. Achievers: those students who would probably graduate and who did measure up to their potentialities in the opinion of the faculty committee.
b. Underachievers: those students who were admitted and who would probably graduate, but who did not measure up to their potentialities in the opinion of the faculty committee.
c. Failures: those students who had either failed or withdrawn from a school of nursing.

## Scoring Reliability

To determine the reliability of NES scoring, 50 pre-admission LHSC records of applicants were selected randomly and scored by a psychologist, three nurses, a social worker and a university student majoring in psychology. The inter-scorer Pearson Product-Moment correlations ranged from .67 to .89. An estimate of scorer reliability was obtained through an analysis suggested by Winer (1962). This indicated that if the scorings were to be repeated with comparable scorers and with the same LHSC records, the correlation between the mean ratings obtained from the two sets of data would be approximately .92. These findings were interpreted as indicating a satisfactory level of scoring reliability although there was some evidence to suggest that experience in scoring sentence completions as well as formal training in psychology would increase the scoring reliability.

## Summary of Results

Few significant results were obtained in the analysis involving the MMPI. Significant findings were noted only in terms of achievement status as related to the Pa (Paranoia) scale. However, investigation of inter-achievement group Pa scale differences found none to be significant. No significant inter-school differences on the MMPI were noted.

No significant differences in Rotter ISB scores were found among the achievement levels. However, in the between-school comparisons, it was found that Luther applicants scored significantly higher than those applying to the other two schools.

The NES Total scores for the LHSC ranged from 65 to 84 for individual students. The mean NES Total scores and the differences between these scores in terms of achievement groupings and schools are given in Tables 12. 1 and 12. 2. Two sets of analyses are reported in Tables 12. 3 and 12. 4, one for combined Luther-Holy Family and one for Madison General alone. In Table 12. 3 (Luther-Holy Family) the F of 20. 76 for achievement status is significant at the . 01 level for 2 and 197 d. f. Neither school nor achievement status by school interaction was found to be significant. Evaluation of the differences between the various achievement groupings revealed that both achievers and underachievers differed significantly from failures (. 01 level). The difference between achievers and underachievers was not significant.

In Table 12. 4 (Madison General) achievement status was significant at the . 05 level in its relationship to NES-LHSC Total score. Additional analysis revealed significant differences (. 05 level) at this school in NES Total scores between achievers and failures and between underachievers and failures.

Analysis of variance were also computed for attitudinal area scores for each of the two sets of schools. At Luther-Holy Family, significant relationships (. 05 level) were noted between achievement status and attitudinal area scores for Self, Home-Family, Responsibility, Others-Love-Marriage, and Academic. At Madison General a significant relationship was noted between Home-Family area score and achievement status (. 05 level).

## Discussion

This phase of the research was addressed to the problem of evaluating further the relationship of personality to achievement status. Its design involved a partial replication of a previously reported segment of this research, Phase I. Phase II differed from Phase I in that it was not concerned with applicants who were rejected nor with an investigation of high school rank and PNG performance.

### MMPI and Rotter ISB

In Phase I no significant MMPI scale differentiations were noted between achievers and underachievers, achievers and failures, or underachievers and failures. A similar lack of differentiation was noted in Phase II.

Personality as evidenced in Rotter ISB performance was found to be unrelated to success in nursing education. Similar findings had been obtained in Phase I. In Phase II inter-school differences were noted with Luther applicants scoring significantly higher than those of the other two schools. In Phase I, the Luther applicants had scored significantly lower than

Holy Family. While difficult to explain, these findings point up the need to consider differences among schools as potentially important factors in establishing accurate predictors of success in nursing education.

Upon completion of Phase I, the researchers concluded as follows: "It seems most tenable to assume that these tests, designed for other purposes, cannot be extended to the prediction of success in nursing education in any simple and straightforward fashion" (Thurston and Brunclik, 1965, p. 207). It was also concluded that "The use of these tests for counseling nursing students would probably require a psychologist who was prepared to test and defend the validity of his judgments. The individual responses to the Rotter ISB might prove of some assistance to nursing school faculty members with sufficient background in psychology to exercise caution in their interpretation" (p. 207). The results of Phase II are interpreted as supporting these statements.

## Luther Hospital Sentence Completions (LHSC)

The LHSC was constructed specifically for the purpose of evaluating the attitudes and emotional reactions of nursing school applicants and students. The Nursing Education Scale (NES) was developed to provide for quantified scoring of this test as an aid to predicting success in nursing education. After Phase I the following conclusions were drawn:

"Differentiations in NES (Preliminary Form) scores between achievers and failures were noted, although there were no differentiations between underachievers and failures nor between the achiever and underachiever groups. The obtained differentiations were of sufficient magnitude to suggest that the NES scores might eventually have value for screening purposes or for identification of those applicants most likely to fail" (Thurston and Brunclik, 1965, p. 207). Recommended at that time were additional cross-validations at Luther and Holy Family as well as at other schools before utilizing the NES scores of the LHSC for the purposes indicated in this quotation.

The relationship of LHSC performance to achievement status is significant and substantial for the schools (Luther, Holy Family) which served in the NES derivation. Achievers and underachievers scored lower than the failures. In addition the relationship of attitude area scores to achievement supported strongly the use of the LHSC in identifying specific areas of psychological strength and weaknesses in a student as they might pertain to success in nursing education. The strength of the relationship was such that operational, predictive use of the LHSC could be recommended at these schools.

The results at Madison General indicate both the potential of the LHSC as well as the need for caution in its usage. While a relationship was established between LHSC performance and achievement in this school, it was not as strong as that noted at the other schools. Both Total score and

and Home-Family area scores were associated with achievement but probably not to a degree that would produce satisfactory prediction of the achievement status of students. In view of the variety of inter-school differences noted in Phases I and II, it would seem that these diverse factors must be taken into consideration in predicting student success. Other schools interested in using this test in a quantitative fashion would be advised to proceed cautiously.

The Phase II results indicate that the following comments from the Phase I summary should be kept in mind by any potential users: "It seems extremely unlikely that the problems of underachievement and failure-withdrawal will be understood fully if they are considered independent of the schools in which they occur. The psychological instruments used for the prediction of success in nursing education might have to undergo 'corrections' or even 'custom-making' for the specific schools or types of schools in which they are to be used" (Thurston and Brunclik, 1965, pp. 208-209).

The LHSC can be useful to nursing schools if used qualitatively as a source of ideas and hypotheses regarding students. While the results would not clearly justify a recommendation for the general operational use of NES scored LHSC's, a relationship between these scores and nursing achievement has been demonstrated. Cautious and judicious use of this scoring system could be helpful to nursing schools.

### New Approaches

Procedures are under investigation which might make the development of useful norms for individual nursing schools a practical reality. These involve the construction of a multiple choice attitudinal measure (Nurse Attitudes Inventory, Forms I and II) and the preliminary use of a statistical technique, discriminant function (Winer, 1962). Discriminant function procedures represent a statistical approach which permits simultaneous prediction with a number of variables which need not be linear correlates of the criterion. With this procedure it is possible through differential weighting of results to make predictions from test results having even limited relationships to achievement at individual schools. Furthermore, new computer routines which are available make rapid and efficient use of discriminant function and other prediction systems entirely feasible.

## Summary

The principal findings of Phase II of this research into the relationship of personality to nursing school achievement are as follows:

1. At Holy Family and Luther Schools of Nursing significant relationships were noted between achievement and NES-LHSC Total and five attitudinal area scores (Self, Home-Family, Responsibility, Others-Love-Marriage, and Academic). At Madison General Hospital School of Nursing achievement was related significantly to NES-LHSC Total score and the Home-Family area score.

2. No significant MMPI scale differentiations were noted between achievers and underachievers, achievers and failures, or underachievers and failures. No significant inter-school MMPI differences were noted. Similar findings had been noted in Phase I.

3. No significant relationship was found between Rotter ISB performance and achievement. Although significant differences between schools were again noted in terms of Rotter ISB scores, the difference was in a direction opposite from that reported in Phase I of this research.

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## Table 12.1

## MEAN TOTAL NES-LHSC SCORES BY ACHIEVEMENT STATUS FOR 445 SECOND YEAR NURSING STUDENTS AT THREE SCHOOLS OF NURSING

| Nursing School | Achievement Status | | | School Means |
|---|---|---|---|---|
| | Achiever | Under-achiever | Failure | |
| Luther Hospital | N = 50 | N = 17 | N = 43 | N = 110 |
| | M = 73.46 | M = 74.59 | M = 77.88 | M = 75.36 |
| | S.D. = 2.90 | S.D. = 4.21 | S.D. = 3.33 | S.D. = 3.86 |
| Holy Family Hospital | N = 56 | N = 17 | N = 15 | N = 88 |
| | M = 74.68 | M = 75.18 | M = 77.00 | M = 75.17 |
| | S.D. = 3.06 | S.D. = 3.07 | S.D. = 2.00 | S.D. = 3.01 |
| Madison General Hospital | N = 113 | N = 45 | N = 89 | N = 247 |
| | M = 74.07 | M = 75.16 | M = 75.22 | M = 74.68 |
| | S.D. = 3.45 | S.D. = 2.98 | S.D. = 3.57 | S.D. = 3.45 |
| | | | | Total |
| Achievement Status Means | N = 219 | N = 79 | N = 147 | N = 445 |
| | M = 74.09 | M = 75.04 | M = 76.18 | M = 74.90 |
| | S.D. = 3.25 | S.D. = 3.26 | S.D. = 3.57 | S.D. = 3.40 |

Table 12.2

## DIFFERENCES BETWEEN MEANS FOR ACHIEVEMENT GROUPS AND SCHOOLS OF NURSING ON PRE-ADMISSION TOTAL NES-LHSC-SCORES

| Groups | Means | Difference |
|---|---|---|
| Achievement Status (Luther & Holy Family) | | |
| Achiever - Underachiever | 74.12 - 74.88 | - .76 |
| Achiever - Failure | 74.12 - 77.66 | -3.54** |
| Underachiever - Failure | 74.88 - 77.66 | -2.78** |
| Achievement Status (Madison General) | | |
| Achiever - Underachiever | 74.07 - 75.16 | -1.09* |
| Achiever - Failure | 74.07 - 75.22 | -1.15* |
| Underachiever - Failure | 75.16 - 75.22 | - .06 |
| School of Nursing | | |
| Luther - Holy Family | 75.36 - 75.17 | + .19 |
| Luther - Madison General | 75.36 - 74.68 | + .68 |
| Holy Family - Madison General | 75.17 - 74.68 | + .49 |

* Significant at .05 level
** Significant at .01 level

Table 12.3

ANALYSIS OF VARIANCE FOR PRE-ADMISSION TOTAL NES-LHSC SCORES AT LUTHER HOSPITAL AND HOLY FAMILY HOSPITAL SCHOOLS OF NURSING

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Nursing School | 1 | 11.14 | 11.14 | 1.14 |
| Achievement Status | 2 | 407.38 | 203.69 | 20.76** |
| Achievement Status x Nursing School | 2 | 34.56 | 17.28 | 1.76 |
| Within Cell | 192 | 1,883.67 | 9.81 | |
| Total | 197 | 2,336.75 | | |

** Significant at .01 level

Table 12.4

ANALYSIS OF VARIANCE FOR PRE-ADMISSION TOTAL
NES-LHSC SCORES AT
MADISON GENERAL HOSPITAL SCHOOL OF NURSING

| Source | | | | |
|---|---|---|---|---|
| Achievement Status | 2 | 78.52 | 39.26 | 3.37* |
| Within Cell | 244 | 2,842.86 | 11.65 | |
| Total | 246 | 2,921.38 | | |

* Significant at .05 level

# Appendix A

## Nursing Education Scale (NES)

### General Scoring Procedures

1. Each sentence completion is to be scored either 1, 2, or 3.

2. The key words describing the general nature of the response category are usually given in the headings.

3. Each category is accompanied by examples illustrating the nature of completions associated with it.

4. When a response contains two parts which could clearly be in two different response categories (1 or 3), score according to the first unless the scoring standards for the completion contains specific instructions to the contrary.

5. Response category 2 is designed for the miscellaneous, non-discriminating completions. Score 2 if no response is made unless there is an indication to the contrary. Accordingly, when a response is not clearly scoreable as either a 1 or a 3, it should be assigned a scoring weight of 2. If the response contains elements of 1 or 3 responses, they should be scored 1 or 3 unless the scoring standards for the completion contain specific instructions to the contrary. The examples given in response category 2 are shown to give the scorer an idea of some of these responses. The tremendous variety of responses in this category precludes the giving of all representative completions.

6. The scorer is cautioned to adhere strictly and literally to the scoring categories.

LHSC-1
NSC-1 WHEN I GO TO NURSING SCHOOL, MY FAMILY . . . . .

(Scoring categories and examples)

Score 3 Focus is on family

will not have to readjust too much; will continue living as they are now; will become smaller, with only two girls in Eau Claire and two smaller kids at home; will be left alone; will have to adjust to having me away from home; will go on without me; will need to find another baby sitter

Score 2 will be proud; will be happy, as they know that is what I want most; hopes I will make good; will see very little of me; will encourage me in my studies; will carry on as always, happy in knowing I'm doing what I want to do; will be able to pay my expenses; will help finance; will want me to be successful as a nurse and person

Score 1 Suggestion of being missed

will miss me; will miss me, but will be glad I'm having such a wonderful opportunity; will miss me, but will be anxious to help me continue my training

LHSC-2
NSC-2 IN HIGH SCHOOL, I WAS HAPPIEST WHEN . . . . .

(Scoring categories and examples)

**Score 3**

**Score 2**

I was with a group; I was partaking in some activity; making new friends; we get a day with no assignments; I pleased someone; I was a senior; I way busy; I knew fellows wanted to take me out; I was with friends; everyone else was happy; I was a junior: participating with the band; it was Friday; I kept up with my schoolwork; I was doing something and particularly when I was successfully completing a task set before me; I could keep on the friendly side of everyone; I succeeded in doing a difficult thing; I met up to other people's expectations; I felt I had accomplished something; my marks were good; I knew my lessions well; when I was with friends and making good grades; report cards came out

**Score 1**

Cheer leader, election to Prom Court, honor society, role in play, or something comparable

being elected cheerleader in my Freshman year and the rest of the years, too; elected Homecoming Queen; I was with a group of friends either cheer leading or at a class play; I was chosen to be in the Homecoming Court; I was chosen Junior Prom Queen

LHSC-3
NSC-3 AT HOME, I . . . . .

(Scoring categories and examples)

Score 3 Any indication of interpersonal difficulties

don't always get along with my mother; get mad when I tell my sister not to do something and she goes to mother and asks her and she gives her permission; don't get much homework done; never have any time for myself; try to get along with my family

Score 2 don't get into trouble; try to be understanding; find sleeping a good pasttime; usually express myself freely; am expected to do my share of work; feel secure; am always completely relaxed; am always busy; watch TV; sew and knit a lot

Score 1 Enjoyment, liking fun, happiness mentioned within home

enjoy doing things with my family; like to take care of my sisters; have a very happy family life; am happy and relaxed; enjoy helping my parents and pleasing them; like to cook and bake; have fun

LHSC-7
NSC-4 TEACHERS . . . . .

(Scoring categories and examples)

**Score 3** Critical or semi-critical

often dislike on first impression; are difficult to talk about, write about, or even explain; expect everyone to cooperate with them; just like in every field, some are very good while others are mediocre; sometimes fail to understand the reasoning and motives of their students

**Score 2** should be respected; are fascinating; should like their job; are human, too; are usually competent; must be understanding; are there to teach us; who use proper discipline techniques will receive respect from their students; usually help you if you are having trouble with any subjects; are usually dedicated to their profession; seem to be different than other people; have a difficult job; are people; are o. k.

**Score 1**

LHSC-8
NSC-5 I FEEL SAD IF . . . . .

(Scoring categories and examples)

Score 3

Score 2 someone I know is hurt; I find my parents quarreling; I lose someone or something; I am tired; someone kills a kitten; I think of sad things; someone close to me is unhappy; I see a small child shabbily dressed; my father feels sad; I fail a test; things go wrong at school; things are not going right; someone makes fun of me; I hear bad news; I do not do as well at school as I might

Score 1 Mention of hurting someone

I hurt someone's feeling; I make someone feel bad by saying something to hurt their feelings; I am bored, or hurt someone's feelings in some way; I say something that hurts somebody else; I have hurt someone or someone else is unhappy due to some other cause; I make someone sad; I see a dog hurt or I hurt someone's feelings

LHSC-9
NSC-6 WHEN ON A DATE, I . . . . .

(Scoring categories and examples)

**Score 3** Problems

often feel shy and find it hard to make conversations, unless my date is a good talker; find conversation is difficult for me to start; can't eat

Concern over standard of conduct or appearance

like to be proud of my date, and have him proud of me; try to be polite; try to look nice; try to avoid embarrassing situations; behave like a lady

**Score 2**

like the boy to suggest where we should go once in a while; expect the boy to have the evening planned; usually go to the movies; think you should act accordingly; enjoy outdoor sports; like to go to dances; like to double date; am my natural usual self; like to have fun; don't like to be too serious

**Score 1** Pleasing other person (indicated somewhere in response)

try to please the boy I'm with; try to make that time pleasant and have good clean fun; try not to be a bore; enjoy listening to my date telling me about any problems he might have

LHSC-10
NSC-7 I LIKE TO HELP WHEN . . . . .

(Scoring categories and examples)

Score 3

Score 2 others are in trouble; I'm doing something worthwhile; the work is something I enjoy doing; what I do will be of some benefit to someone; I do it because I want to, not because someone tells me to; the other people are cooperative; I can have a good time; everyone is having a good time; everyone else is pitching in; I feel needed; I'm sure that I'm needed so that I won't be a bother or hindrance; and if I can be of help and people who need help; and if I see there is work to be done; my help is appreciated; appreciation is shown; the other person will be grateful; when help is needed

Score 1 Anytime

-ever I can; I get the chance

Capable

I can be of help; I know that I'm doing the right thing; I know where I can best put my services; I feel that I can be of service to someone or make them happy; I can do something well

LHSC-12
NSC-8 I'M DIFFERENT FROM OTHER GIRLS IN THAT . . . . .

(Scoring categories and examples)

Score 3

Score 2

I don't like many modern things; I have many moods and usually do things when I am in the mood for it; I like to read very much; I feel inferior; I sometimes feel that I don't have a chance but I always come out OK; I don't like to talk about myself; I blush easily; I don't goof around; I really don't know; I like snowball fights; I look different; I enjoy hauling bales of hay in the summer

Score 1 Stays home, doesn't date

I don't mind staying at home; I don't enjoy going out a great deal; I don't like to be on the go all the time, but I like to stay home some time and read or watch TV; I don't date regularly

Works, works hard, takes things seriously

I work harder; my home life requires more work; I endeavor to complete my work before seeking a good time; I take things seriously

LHSC-13
NSC-9 MY FAMILY . . . . .

(Scoring categories and examples)

Score 3 Negative or indicative of personal trouble, problems

sometimes drives me buggy; never seems to be completely happy; is very happy now; gets in my hair sometimes; could be more closely knit

Score 2 is different; never has a dull moment; things that I should become a nurse; is very large; is a family of six children; has done a lot for me; is wonderful to me; is a happy one and likes to travel; I find is the most important element in my life; is very dear to me; is always interested in things I do; has a hard time making both ends meet; are a closely knit group; is wonderful to me even though I don't always appreciate it; gives me something to depend upon

Score 1

LHSC-15
NSC-10

## WHEN SOMEONE TELLS ME TO DO SOMETHING . . . . .

(Scoring categories and examples)

Score 3 Sometimes (usually), no conditions attached

I am generally willing to do it for them; I usually find myself doing it, even if I don't like to; I usually do it

Score 2 I do my best; I listen; I try as hard as I can if it is within my power; I would rather not do it; I try to do it well; I do it; I try to understand what I'm to do; I like to comply; I think that I shouldn't complain; I try to fulfill their request satisfactorily; I try to do things right; usually don't mind doing it; I resent it

Score 1 Conditional response (if--unless), consider it

I do it, but if it's wrong I say why; I do it if it's reasonable; I usually do it, if it's reasonable; I think about it; I do it unless it is wrong or goes against my principles

LHSC-16
NSC-11 WHEN WITH STRANGERS, I . . . . .

(Scoring categories and examples)

Score 3 Interpersonal difficulty, feel alone, awkward, rather stay by self

prefer to stay by myself; feel rather alone; feel sort of awkward; am awkward; don't know what to say; sometimes have to struggle with words; usually don't say much; am quiet; am not as talkative; feel a bit uncomfortable

Score 2 am self-conscious at first, but then I have a good time; have trouble initially only; usually feel very much at ease; look for acceptance; try to act casual; find myself challenged; usually talk to them if I can think of something to say; try to feel as if with friends; try to act normal and make them accept me; like to look them over and see what they are all about; do my best to belong; strive to keep a conversation going; am polite and courteous; try to talk to them and I always wear a very big and friendly smile

Score 1

LHSC-17
NSC-12 SUPERVISED STUDY PERIODS . . . . .

(Scoring categories and examples)

Score 3 Cite need or benefit

benefit the student; are more beneficial than unsupervised study periods; would be a great help; are the key to learning; are necessary to get good grades; are the best for high school students; are a necessity in school; are excellent in my opinion; are needed; can be of value; are needed if students are not mature

Score 2 are good if they're supervised properly; are all right; provide an opportunity to do work that does not require research; seem long sometimes; have their moments; shouldn't be needed, but sometimes are; are OK; work sometimes

Score 1 Unnecessary, useless

are for children; are a waste of time for most high school students; are hard to study in; are as noisy as the unsupervised ones are; are necessary only when students are not mature enough to be trusted; are OK but I am for cutting them out entirely because they are too noisy; are not necessary for most students since they are often abused and used for anything but studying; are boring

LHSC-18
NSC-13 I PRAY . . . . .

(Scoring categories and examples)

| | |
|---|---|
| Score 3 | |
| Score 2 | that we don't have a third World War; that it doesn't rain on days I must work; but not enough; that I'll be successful; when I think of God; more than I used to; whenever I'm in trouble; because through praying, I feel my troubles aren't so bad; when my conscience directs me to; when something is bothering me; when I feel the need; that everything will work out well for me; when I'm frightened; that my nursing career will go well; often and at any time of day; regularly at meals and bedtime; every day; every day, but especially often when I feel discouraged |
| Score 1 | For others<br>for all my friends and relatives; for my parents; for all my friends and relatives |

LHSC-20
NSC-14 TEN YEARS FROM NOW, I . . . . .

(Scoring categories and examples)

Score 3

Score 2 will probably be married; will probably have enjoyed myself considerably; plan to get married and have a family; wonder where I'll be or what I'll be doing; I'll be ten years older; I'll be twenty-nine years old; I would like to be well-established in life; I would like to travel; will have a home and family of my own; will be married; want to have made something of myself; really don't know where I'll be; I would like to take a very long vacation trip; hope to be a successful wife and mother

Score 1 Statement mentioning nursing, working in hospital

hope to be a top-notch surgical nurse; hope to be a successful R. N.; hope to have a successful career in nursing; think nursing will still be useful to me; hope to be a registered nurse; hope to be an R. N. working part-time to fulfill my family's needs

LHSC-21
NSC-15 MOST PEOPLE THINK THAT A NURSE . . . . .

(Scoring categories and examples)

Score 3 Unpleasantness stressed

has a very undesirable job; has a strong stomach; is constantly surrounded by a life of bloody messes; cleans bed pans all day; has to do all the dirty work; must work hard and take a lot

Score 2

is a doctor's assistant; get paid a lot; is a helper; is an angel of mercy; wants to marry a rich doctor; is kind and thoughtful; works hard; is hard-working and friendly; should be perfect; is a stiff, efficient person; has no emotional feelings; doesn't have much feeling about her patients; is hard to get along with

Score 1 Mention of worth, respect, importance

is a necessary part of today's modern world; is respected; has dignity; is a woman of high standing in the community; is a very respectable well-educated, polite, friendly person; is a very superior person; is a person to respect and honor; is an exceptional person; has good judgment in social as well as medical situations; is a mature, responsible person; is wonderful; is responsible; is dedicated

Competence stressed

is efficient; is very competent; is a capable person

LHSC-22
NSC-16 OTHER PEOPLE THINK OF ME AS . . . . .

(Scoring categories and examples)

Score 3 Shy, bashful, quiet

rather quiet and even dull, because I devote most of my time to my studies; the quiet home type; a shy person; being quiet, helpful, and innocent; somewhat bashful, one who blushes easily; reserved

Score 2 I really don't know; a respectable person; someone who will go to college; 'Mac'; my parent's daughter; talking too much; being friendly; a girl with a lot of pep; a riot; a future nurse; a kind person; just another person

Score 1 Happy, fortunate

fun-loving; a lucky girl who has just about everything; a girl who smiles a lot, cheerful

Competent, dependable, hard-working

being quite prompt and competent; a dependable girl; a person capable of becoming a nurse; a careful and happy girl; always fair; a mature, responsible girl who knows what she wants; conscientious

LHSC-24
NSC-17 I FEEL DISGUSTED WITH MYSELF WHEN . . . . .

(Scoring categories and examples)

Score 3

Score 2 I get angry and lose my temper; I could have done better when I don't do so well; I speak without thinking; I make silly mistakes; I try to do something and it doesn't turn out right; I make stupid mistakes; I have tried my hardest and fail to accomplish my goal; I gain weight; I'm sick; I get depressed; I feel sorry for myself; I miss doing things I know how to do; I let people down

Score 1 Performs poorly in school

I fail a test or do badly on it; I fail to get grades above 90; I fail a test; I get poor marks on a test; make mistakes on tests; I fail to prepare an assignment

LHSC-25
NSC-18 WHEN ASKED TO TAKE CHARGE, I . . . . .

(Scoring categories and examples)

Score 3

Score 2

try to do the best I can; I'm not too sure of myself; take charge if I can; try to do my best; suppose I would; first organize my thoughts and find out what is to be done; feel honored;usually do; usually follow the accepted pattern of work; usually do what I'm told; feel that people have confidence in me; feel quite important; want to know what is expected of me

Score 1 Unequivocal acceptance (a 'take chage' attitude)

take charge; can do so capably without any trouble; do; do it; do so with enthusiasm; do the work to the best of my ability; do the best I can

LHSC-26
NSC-19

## THE TROUBLE WITH OTHER PEOPLE . . . . .

(Scoring categories and examples)

Score 3 Reluctance to criticize or realization that fault may lie within themselves, failure to respond to this item

is usually found in ourselves; and myself is that we often jump to conclusions about other people too quickly; is myself; and myself, too, is that we put off things until another time; that is a very interesting and perplexing question, and I'm sure that if I could answer it, I would have made an astounding discovery, and would therefore know how to better myself, also; is often said by someone who doesn't realize that he, too, has faults; is not my problem; (leaves blank)

Score 2 is that they take life so seriously; is that they don't think; is that they're too quick to judge and criticize other people; is that they are too worried about the next fellow; is that they don't understand others; is that they think about the future too much; they just don't understand me; is that they're in too much of a hurry; is that they are always worrying; could be a lot of things; is that they don't understand teenagers; is that they expect too much

Score 1

LHSC-28
NSC-20 IF I COULD CHANGE . . . . .

(Scoring categories and examples)

Score 3

Score 2

I'd like to be more charitable; I'd just love to be an airplane pilot; I'd be a better person; I would become more aggressive; my life, I would hesitate, as I do not know what I would do or be in that I could not be more satisfied then than I am now; the time element I would be all finished with school; I'd be brighter; myself, I wouldn't; I'd try to be less interested in boys; the state of the world, I would free all others from Communism; the world, I'd do it; my past, I'd like to have been born richer

Score 1 Study habits and school work

my high school years, I'd strive to better understand what I was taught; I would be a girl who studied much harder in high school; I would have studied harder in school; my study habits, it would be a big help

Change of physical characteristics

my appearance, I would lose about 30 pounds; I'd like to be much prettier; I'd be a boy; I would like to be less tall; I would change my figure; I would like to be taller, and possess a beautiful singing voice; I'd have a better personality and be taller; my face, I would want it to be without the acne I now have; I'd change my looks

LHSC-31
NSC-21 WHEN I THINK OF MYSELF AS A NURSE, I . . . . .

(Scoring categories and examples)

**Score 3**

**Score 2**

hope that I will be a good nurse; hope that it comes true; think I've accomplished something; think of me listening to other people while I take their pulse; feel good inside; see myself working with others; am really happy; feel needed; can hardly wait; get butterflies in my stomach; wonder if I'll make a good one; see a smiling person; put forth all my effort in my work

**Score 1** Helping, assisting

picture a smiling, friendly, helpful person; hope that I will be able to help people and get along with them to the best of my ability; think of the people that I will be able to help; think of myself helping people who are in pain or distress; think of how wonderful it would be to help bring a baby into the world; think of all the different people I will meet and help; see myself in a white uniform walking down a dimly lit corridor toward the desk or assisting a surgeon in a delicate operation; hope I'll fulfill the job right and will be able to help many people

LHSC-33
NSC-22 MY MOTHER THINKS THAT I . . . . .

(Scoring categories and examples)

**Score 3** Unfavorable evaluations, juvenile

lack self confidence; believe too many things I hear; run around too much; am not able to handle the car as well as my younger brother; am not the type; am a spoiled brat; should go on a diet; am extravagent but helpful to her; am scatter-brained when I become excited; am finally growing up; don't help around the house enough; am still her little girl

**Score 2**

should do what I want to as far as education goes; am a nice girl; am dependable; should not smoke; am capable of achieving success if I work hard enough; should be able to make my own decisions; worry too much about school work; am very different from the normal girl my age; could be a good nurse; take things too seriously; am generally trustworthy; am a fairly well-rounded individual for my age; am different

**Score 1**

LHSC-34
NSC-23 I HOPE I NEVER . . . . .

(Scoring categories and examples)

Score 3

Score 2

have to have my teeth pulled; get too busy; get into serious trouble; have to get married; kill someone while driving a car; fail a course; get an incurable disease; lose my urge to travel; have to see another tornado like the one Colfax had; stop enjoying life; flunk out of nursing; see the day when the whole world is destroyed; grow old; hurt anyone; go steady; marry the wrong person; make mistakes that will harm anyone; get too involved in too many things; am alone; lose my religion

Score 1 Disappoint or hurt parents

will hurt my parents when not meaning to or otherwise; disappoint my parents; disappoint my family; do anything that will cause my parents to become disappointed and unhappy;lose my parents' trust or cause them more worry than is natural; cause my parents needless worry

LHSC-35
NSC-24 WHEN THEY ASK FOR VOLUNTEERS . . . . .

(Scoring categories and examples)

Score 3

Score 2

I usually feel that it is my duty to accept; I'll sometimes volunteer if I'm interested; it depends; I usually do; I volunteer if I feel I will do a good job; I volunteer if I'm able and consider myself capable of the job; I try to cooperate; I usually am one of the first; I sometimes wave my flag; for serving church breakfasts I volunteer whenever I'm able; I'm usually willing to help out; usually I don't volunteer unless I'm interested; I hesitate; I sometimes volunteer, but usually not; I usually don't

Score 1 Accepts volunteer role readily or invariably

I am ready to give a hand to help someone in need; I am not afraid to pitch in and work; I like to help out; I find it hard to say no; I am willing to help people whatever the task may be; somehow I feel obligated and end up volunteering; I will now jump at the chance (I didn't in high school, but I did in college) to further my knowledge, boost my leadership experience, and mainly because I want to be cooperative and helpful whenever possible; I raise my hand

LHSC-39
NSC - 25 I PLAN TO MARRY WHEN . . . . .

(Scoring categories and examples)

Score 3

Score 2 I feel mature enough for it; I feel I'm ready to take on the responsibility; -ever I get the chance; I'm good and ready; I worked for a couple of years; I am about 25; I am married and love my family very much; I can afford to settle down; I find a man; I find the man I want to marry and we both feel prepared; I meet someone with similar interests; I meet the man I love; I have seen a little more of life; I get older; and if I find the right man

Score 1 Specifies finishing of education or nurses training

I finish school; I am through nursing school; I have finished my education and find the right guy; I have finished my schooling and found the guy I'm in love with; I've become a nurse and worked for a while; I have become a nurse and have worked a few years

LHSC-41
NSC-26 IF NOT ADMITTED TO NURSING, I'LL . . . . .

(Scoring categories and examples)

Score 3

Score 2

attend college; will probably enter a business college; be a Phy Ed teacher; join the Women's Service; have to make plans for doing something else; try for some other kind of work; try to get a job as a nurse's aid or waitress; become a laboratory technician; become a social worker; get a job; feel embarrassed; never make anything of myself worthwhile: try something associated with it; wilt, dehydrate; I'll have to work something else out; I'll stay around home for awhile; try again next year, but will go into college if not admitted then; apply to another nursing school or a state college; realize that I can't give up

Score 1 Disappointment, sad, discouraged

be very disappointed; be disappointed, but I have a thought about applying for the pre-nursing course and then going into nursing later; be very disappointed and if no accredited school will take me I would take Home Economics; die; be sad; be discouraged; depressed

LHSC-45
NSC-27 IN MAKING A DECISION, I . . . . .

(Scoring categories and examples)

Score 3

Score 2

hesitate; worry about doing the right thing; weigh all the facts; should take time to think about it; try to weigh all the advantages and disadvantages; can easily be persuaded by glittering statements; try to do what is best; usually make the wrong one; try to be practical; find it hard; find it hard to change my mind; take my time; never make snap judgments; do not like to take too long; find it difficult

Score 1 Mention of some reliance upon other people, or the Divinity

wish someone were there to help me; usually ask other people's advice to help me decide; often seek other people's advice; like to talk it over with my mother; think of the pros and cons of the situation and if I can, I get advice from someone wise enough to give it; try to consider all angles and then go ahead and decide or if serious enough, seek advice from a person who had a similar experience; sometimes ask other people what they think, but I use my own common sense; ask God's guidance

LHSC-46
NSC-28 OTHER GIRLS MY AGE . . . . .

(Scoring categories and examples)

| | | |
|---|---|---|
| Score 3 | Envy | seem to have more fun than I do; sometimes are permitted to do things that I am not; keep the money they earn, I give mine to my mother; seem to go out with the boys more often than I do; have better times than I do; get to go places that I can't; have pretty hands because they don't have to work so hard |
| Score 2 | | don't do much studying; are Juniors;have ambitions; have somewhat the same interests as mine; are in general as intent as I am upon being successful; are seventeen years old; do not seem to understand the important things in life; sometimes act silly; drink and smoke; are boy crazy; don't take things as seriously as I do; are very much like me; are thinking about getting married; make good friends; seem more mature; are fun to be with; are doing various things that appeal to them |
| Score 1 | | |

LHSC-50
NSC-29 WHEN I NEED MONEY . . . . .

(Scoring categories and examples)

Score 3

Score 2

I try to see whether it is necessary or not; I earn it by typing; I do babysitting; I save from my allowance; I always find a way; I ask my parents for it; I borrow it from my sister; I get an advance; I work for it; I get my pay check; I like to feel I've earned what I spend; I tell my mother about it and she gives me the cash; I have to borrow it; I try to see if I really need it; I ask my parents; my allowance comes in handy; I have to dig for it; I write out a check; I try and earn it first

Score 1 Expression of dislike for asking parents

I dislike asking my mother for it; I hate to ask my parents for it. I know they'll give it to me, but I'd rather earn it; I try to get it on my own rather than ask my parents; I don't like to ask my parents for it

LHSC-54
NSC-30 I HAVE MOST CONFIDENCE IN . . . . .

(Scoring categories and examples)

Score 3

Score 2 the fact that I'm liked; my social graces; God; someone who has ambition; my present successes; boys who seem a little awkward and unsure of themselves rather than smooth talkers with a line a minute; my girl friends; my brother; the fact that if I put forth all my effort, I can become a registered nurse; my ability to reason and probe for the facts; myself, those who are organized; in a new dress; other people; my ability to get along with people; myself; those who have proven themselves; my closest girl friend; my boy friend

Score 1 Parents, family

my father; my mother; my parents; my parents' judgment; close friends and my parents; my family; my husband

LHSC-55
NSC-31 WHEN CRITICIZED, I . . . . .

(Scoring categories and examples)

Score 3

Score 2

listen; try to accept it graciously; can usually take it; wish I had done better; try to accept the criticism politely; don't always take it the right way; feel grateful that someone cares enough to do so; try to take it without a word; try to pay attention; try to remember that it's for my own good; usually profit by it; try to correct the fault criticized

Score 1 Judge or question criticism

usually look to see if it is well warranted; like to know why and if I'm wrong I want to correct my errors; try to find out if the criticism is justifiable; may be hurt at first but try to think the criticism through; think the criticism over to see if there is anything in it

Hurt, anger, or annoyance indiciated

get mad, then change; do not become angry; may be hurt at first; get annoyed; feel hurt when it is personal, something I must get over; feel ashamed of myself for doing something wrong; try to tell myself their intention is to help me rather than to offend me; feel bad; try not to be resentful; try not to feel hurt

LHSC-57
NSC-32 MY MOST DISAPPOINTING EXPERIENCE IN HIGH SCHOOL . . . . .

(Scoring categories and examples)

Score 3 School work, poor grades, failing

was getting a bad mark on a paper I had worked hard on; was getting a low grade on my Chem tests; was a bad report card; my algebra class; getting a C; was not getting better grades

Score 2

was when I got told off before the whole class; was when I had to have braces on my teeth; didn't occur yet; was entering a new school in my Senior year; was my Freshman year; was not having more of a part in service of school; was when I couldn't take part in all the activities I liked; was when I didn't get to work on the school paper; was when I didn't make junior choir; was not having enough dates; was losing a friend; happened in my last year; is not having more dates; was the first dance I attended; disagreeing with my algebra teacher

Score 1 Missing individual honors, such as place in proms, forensics, plays, music competition, cheer leading, or something comparable

not becoming the homecoming queen; in not getting a part in the play because of my schedule; was not receiving a foreign exchange scholarship; came when I was a Freshman and received a low rating at the music festival; when running for class office I lost the second year; was not becoming a homecoming football queen; is when I flubbed my clarinet solo in front of the judge and embarrassed my accompanist as well; was when I didn't make the cheerleading squad; I'll miss being salutatorian or valedictorian; was when I missed the honor roll; not becoming soloist with the choir

LHSC-64
NSC-33 I WORRY . . . . .

(Scoring categories and examples)

Score 3 About many things; much of time

about many things; about little things as well as big things; too much before the things happen; far too much about foolish things

Score 2 most on a dreary day; about my parents and brother; about the future; some, but not as much as others; occasionally about some things, but I find it doesn't pay to worry as that won't help the situation; about finding a good summer job that pays well; about failing in the future; when something goes wrong; when I have to be in front of a lot of people; about very few things; about my appearance; about my family; most when I feel I have made a wrong decision; very little; about how I'll finance my schooling

Score 1 About grades, tests, school, getting into nursing school, failing in nursing school

about grades; about difficult tests; a lot about school work; about semester tests; about getting low grades in school; when my grades take a slump; about passing the nurse's tests, otherwise when anyone in the family is sick; when my homework isn't done; mostly about my school work

LHSC-68
NSC-34 MY GREATEST ASSET . . . . .

(Scoring categories and examples)

Score 3

Score 2

is my friendliness; my family; my even teeth; could be my school record; is my smile; is that I like science; is my originality; is my good health; is my personality; my ability to talk to others; is my religion; is my voice; is my phonograph and sewing machine; is not known yet; is my ability to get along with others; is kind of hard to identify

Score 1 Tenacity, caring, application, ambition, drive

is my try again attitude; I think is my will power; is the desire to be a good nurse; my ability to study, is determination; tendency to worry; is my desire to learn

LHSC-71
NSC-35 BATHING SOMEONE IS . . . . .

(Scoring categories and examples)

Score 3

Score 2

something I'll have to learn; refreshing for the patient; sometimes pleasure, sometimes chore; merely helping someone; not always easy; great fun; enjoyable as well as profitable experience; important to keep them clean; is not so hard; going to be quite an experience; a lot of work; something I've never done

Score 1 Embarrassment or upset, either denied or expected

embarrassing, unless it would be a child; a task which one shouldn't be embarrassed about doing; a task none should think of as embarrassing; something that doesn't bother me; an impersonal matter and is necessary when a person is ill and cannot do it themselves

A part of nursing, training or practice

part of nursing; something I know every nurse must do, and I think I will do it well enough; just another duty in the hospital which can be either pleasant or unpleasant. I have chosen to make it pleasant; one of the most important things that a nurse does for her patient; one of the first things a student nurse does

LHSC-76
NSC-36 THE MOST IMPORTANT PERSON . . . . .

(Scoring categories and examples)

Score 3 Boy friends, future husband

to me is the boy friend I don't have; in my life right now is the boy I am going with; in my life is my boy friend; to a girl would be her future husband

Score 2 in the world is the hand that rocks the cradle; in any job is that of the organizer; is my favorite aunt; must have a series of obligations to society; is one who has good personality and qualities of leadership; is himself; is the President; is my father; is my mother; are one's parents; to me is my best friend; in the world is the President of the U. S. A.; in anyone's life is herself; to a child is his mother; is my husband

Score 1 Religious

God; in my life is my God who ever lived was Jesus Christ; is my minister; is the Pope; is our parish priest

LHSC-77
NSC-37 IN SCHOOL, I . . . . .

(Scoring categories and examples)

Score 3 Personal troubles

dislike teachers who cannot control their tempers; got into trouble; was too concerned about what other people think; don't like it when teachers waste time or give unreasonable assignments; bothered too much about other people's opinions

Score 2

had two study halls per week; sometimes find it hard to study in my free periods; try to get my work done; did my best; do lots of research; have taken part in many extra-curricular activities; found that extra-curricular affairs relieved the drudgery of studying; got along well with my teachers and classmates; participated in my extra-curricular activities but tried to keep my grades; got all I could out of everything; learned a lot; should have studied harder; had little free time; liked almost all my subjects; liked Biology, Physiology and Science

Score 1

LHSC-84
NSC-38 WHEN AFRAID, I . . . . .

(Scoring categories and examples)

Score 3 Seek companionship, help from others

like to be near people; do not like to be alone; seek companionship; tell my fears to someone else who calms them; like to be with others; usually try to hide or if I'm with someone else I'm not as easily scared

Score 2 whistle; act very quickly; smile; bite my lower lip; hide; freeze; shake; usually have butterflies in my stomach; try to find some way to distract myself; read in order to forget; lose my appetite; try to forget it; say to myself, 'Don't be a goose'; pray; ask God to help me; get very excited; begin to shake; find something to take my mind off the things that scare me; have an upset stomach

Score 1

LHSC-87
NSC-39 IN HIGH SCHOOL, MY ASSIGNMENTS . . . . .

(Scoring categories and examples)

Score 3

Score 2 were easier if I understood when I read instead of just copying from the book; were made and asked for daily; are very easy; are pretty long; were never too difficult; are many; are usually given to me on the same nights; take up most of my time; are almost always completed; are really the limit, especially this year; were long and hard; were adequate; were short; were quite varied; were unending

Score 1 Punctuality ('on time') emphasized; always completed

usually were done on time; were always in on time mainly because I was afraid to hand them in late; were usually handed in on time unless I didn't understand how to do them; were always in on time and usually done well; were always done on time; were always done

LHSC-90
NSC-40 THE FIRST TIME AWAY FROM HOME, I . . . . .

(Scoring categories and examples)

Score 3

Score 2

missed my father; was homesick; didn't get very lonesome; visited relatives; forgot my toothbrush; met many nice people; wasn't afaid at all; got homesick; was very excited; was very yong and wished to return home; didn't get too lonesome; got to meet a lot of people; didn't get scared; missed everyone

Score 1 Enjoyment without being lonely, sad, or homesick

had a merry good time; enjoyed myself but I was glad to get back home again; thoroughly enjoyed myself and wasn't the least bit homesick; had a lot of fun; enjoyed myself but was glad to get back; had a good time; didn't become lonesome but enjoyed myself since I was with my own age group

# Appendix B

## Six Illustrative Cases

This chapter has six illustrative records for practice NES scoring. The NES scoring key is found in Appendix A of this report. The stems have both NSC and LHSC numbers. Non-scoreable LHSC stems and their responses have been omitted. The NES scorings of these records are located in the section of this chapter which follows these records.

## Student A

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will have to help pay for some of my education. |
| 2 | 2 | In high school, I was happiest when .... I was chosen a member of the National Honor Society. |
| 3 | 3 | At home, I .... like to play with my brothers and sisters and help my mother with her work. |
| 4 | 7 | Teachers .... are people to help you learn. |
| 5 | 8 | I feel sad if .... I know I have hurt someone's feelings with a sharp tongue. |
| 6 | 9 | When on a date, I .... try to be friendly but not forward. |
| 7 | 10 | I like to help when .... help is needed and appreciated. |
| 8 | 12 | I'm different from other girls in that .... I am a little fatter than most girls. |
| 9 | 13 | My family .... life is complicated by my father's drinking. |
| 10 | 15 | When someone tells me to do something .... I usually do it, depending on the tone of voice and degree of authority. |
| 11 | 16 | When with strangers, I .... try to get to know them. |
| 12 | 17 | Supervised study periods .... are helpful when a person has a large number of studies. |
| 13 | 18 | I pray .... that I am accepted by this school. |
| 14 | 20 | Ten years from now, I .... hope that I will be happily married. |
| 15 | 21 | Most people think that a nurse .... should be an infallible human being, devoted only to helping the sick. |
| 16 | 22 | Other people think of me as .... friendly and polite, but it is impossible to get along with everyone. |

| NSC | LHSC | Student A |
|---|---|---|
| 17 | 24 | I feel disgusted with myself when .... I hurt someone's feelings even though it may not be intentional. |
| 18 | 25 | When asked to take charge, I .... sometimes hesitate. |
| 19 | 26 | The trouble with other people .... everyone has their faults including me. |
| 20 | 28 | If I could change .... I would ask for a better understanding of math. |
| 21 | 31 | When I think of myself as a nurse, I .... hope I can make a very good one. |
| 22 | 33 | My mother thinks that I .... am a responsible person. |
| 23 | 32 | I hope I never .... lose my religion. |
| 24 | 35 | When they ask for volunteers .... I always do. |
| 25 | 39 | I plan to marry when .... I have finished school. |
| 26 | 41 | If not admitted to nursing, I'll .... probably go into a related field. |
| 27 | 45 | In making a decision, I .... say a prayer. |
| 28 | 46 | Other girls my age .... have part time jobs. |
| 29 | 50 | When I need money .... I earn it. |
| 30 | 54 | I have most confidence in .... other people who maintain high grades in school. |
| 31 | 55 | When criticized, I .... usually listen and try to do better. |
| 32 | 57 | My most disappointing experience in high school .... was not becoming one of the top five students in my class. |
| 33 | 64 | I worry .... when my mother and father aren't home when they said they would be. |
| 34 | 68 | My greatest asset .... is my ability to plug ahead. |

| NSC | LHSC | Student A |
|---|---|---|
| 35 | 71 | Bathing someone is .... something I have no qualms about. |
| 36 | 76 | The most important person .... is my mother. |
| 37 | 77 | In school, I .... do my best to get good grades. |
| 38 | 84 | When afraid, I .... say a little prayer and then I feel better. |
| 39 | 87 | In high school my assignments .... were always done on time. |
| 40 | 90 | The first time away from home, I .... missed my family very much at first. |

## Student B

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will be glad if I do good work and like it. |
| 2 | 2 | In high school, I was happiest when .... I was with a group of people having fun. |
| 3 | 3 | At home, I .... help with the family tasks as much as I can. |
| 4 | 7 | Teachers .... can be helpful if you let them. |
| 5 | 8 | I feel sad if .... my friends are hurt in any way. |
| 6 | 9 | When on a date, I .... try to have fun. |
| 7 | 10 | I like to help when .... I know that I can be of real use. |
| 8 | 12 | I'm different from others girls in that .... my eyes are gray. |
| 9 | 13 | My family .... is very dear and close to me. |
| 10 | 15 | When someone tells me to do something .... I rationalize as to which is right or wrong in my judgment and then decide accordingly. |
| 11 | 16 | When with strangers, I .... am usually too reserved. |
| 12 | 17 | Supervised study periods .... are a big help when I really have to study. |
| 13 | 18 | I pray .... for the happiness of my family, friends, and myself. |
| 14 | 20 | Ten years from now, I .... would like to be married and working part time if possible. |
| 15 | 21 | Most people think that a nurse .... is a lady in a white uniform who is always ready and willing to help when needed. |
| 16 | 22 | Other people think of me as .... being fairly good-natured. |

| NSC | LHSC | Student B |
|---|---|---|
| 17 | 24 | I feel disgusted with myself when .... I do a very poor job on a test. |
| 18 | 25 | When asked to take charge, I .... do so. |
| 19 | 26 | The trouble with other people .... is nothing. |
| 20 | 28 | If I could change .... I would be more patient and thoughtful. |
| 21 | 31 | When I think of myself as a nurse, I .... feel proud and rather happy. |
| 22 | 33 | My mother thinks that I .... should learn to swim. |
| 23 | 34 | I hope I never .... turn away from my religion. |
| 24 | 35 | When they ask for volunteers .... I usually do if it is possible for me to volunteer. |
| 25 | 39 | I plan to marry when .... I find someone who is considerate, thoughtful, and affectionate. |
| 26 | 41 | If not admitted to nursing, I'll .... try to enter a practical school of nursing. |
| 27 | 45 | In making a decision, I .... try to make the best one. |
| 28 | 46 | Other girls my age .... have many of the same problems I have. |
| 29 | 50 | When I need money .... I'd rather work for it than ask the folks. |
| 30 | 54 | I have most confidence in .... someone who is trustworthy. |
| 31 | 55 | When criticized, I .... usually try to determine whether or not the criticism is deserved. |
| 32 | 57 | My most disappointing experience in high school .... was not being selected as cheerleader. |
| 33 | 64 | I worry .... about one particular person. |
| 34 | 68 | My greatest asset .... is my wonderful family. |

| NSC | LHSC | Student B |
|---|---|---|
| 35 | 71 | Bathing someone is .... a way to speed his recovery. |
| 36 | 76 | The most important person .... in the world is a phrase that cannot be applied to just one person. |
| 37 | 77 | In school, I .... try to be active. |
| 38 | 84 | When afraid .... I do not always think straight. |
| 39 | 87 | In high school my assignments .... are done as well as I can. |
| 40 | 90 | The first time away from home, I .... felt lost and missed my mother the most. |

## Student C

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will be happy. |
| 2 | 2 | In high school, I was happiest when .... I was in my senior year. |
| 3 | 3 | At home, I .... usually enjoy cleaning house. |
| 4 | 7 | Teachers .... can be friends if you give them a chance. |
| 5 | 8 | I feel sad if .... I feel that people do not like me. |
| 6 | 9 | When on a date, I .... dislike parking, I would much rather go bowling. |
| 7 | 10 | I like to help when .... someone needs me. |
| 8 | 12 | I'm different from other girls in that .... I give my honest opinions instead of beating around the bush. |
| 9 | 13 | My family .... is one that has had its ups and downs like any other. |
| 10 | 15 | When someone tells me to do something .... I usually try to do it. |
| 11 | 16 | When with strangers, I .... try to make them laugh. |
| 12 | 17 | Supervised study periods .... usually help me study better. |
| 13 | 18 | I pray .... that I am accepted by this nursing school. |
| 14 | 20 | Ten years from now, I .... hope to be happily married. |
| 15 | 21 | Most people think that a nurse ... is an "angel of mercy." |
| 16 | 22 | Other people think of me as .... a nut. |
| 17 | 24 | I feel disgusted with myself when .... I do something dumb. |
| 18 | 25 | When asked to take charge, I .... often hesitate for fear that others will think that I'm showing off. |

| NSC | LHSC | Student C |
|---|---|---|
| 19 | 26 | The trouble with other people ... is that some of them jump to conclusions. |
| 20 | 28 | If I could change .... I would have more control over my temper. |
| 21 | 31 | When I think of myself as a nurse, I .... wonder if I'll ever really become one. |
| 22 | 33 | My mother thinks that I .... am rather silly. |
| 23 | 32 | I hope I never .... prove to be a major disappointment to those who have faith in me. |
| 24 | 35 | When they ask for volunteers .... I will volunteer unless there is something urgent that I must do. |
| 25 | 39 | I plan to marry when .... I have graduated from nursing school. |
| 26 | 41 | If not admitted to nursing, I'll .... do my best in whatever I am assigned to do. |
| 27 | 45 | In making a decision, I .... do a lot of thinking. |
| 28 | 46 | Other girls my age .... often make foolish mistakes by marrying before they consider further education. |
| 29 | 50 | When I need money .... I usually just have to ask my folks. |
| 30 | 54 | I have most confidence in .... my parents. |
| 31 | 55 | When criticized, I .... try to accept it as gracefully as possible. |
| 32 | 57 | My most disappointing experience in high school .... was when our senior class didn't have a senior play. |
| 33 | 64 | I worry .... occasionally but usually I accept things as they come. |
| 34 | 68 | My greatest asset .... is my physical fitness. |
| 35 | 71 | Bathing someone is .... questionable, depending on who it is. |

| NSC | LHSC | Student C |
|---|---|---|
| 36 | 76 | The most important person .... in my life will be the person who will solve all my problems. |
| 37 | 77 | In school, I .... liked advance biology. |
| 38 | 84 | When afraid, I .... try to keep calm and remember that the Lord is watching over me. |
| 39 | 87 | In high school my assignments .... usually are in on time, but once in awhile I slip up. |
| 40 | 90 | The first time away from home, I .... didn't get homesick. |

## Student D

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will cooperate in any way they can. |
| 2 | 2 | In high school, I was happiest when .... everything went smoothly. |
| 3 | 3 | At home, I .... help make the meals, clean, and wash dishes. |
| 4 | 7 | Teachers .... are sometimes very understanding, but sometimes are not. |
| 5 | 8 | I feel sad if .... one of my friends is hurt in some way. |
| 6 | 9 | When on a date, I .... enjoy finding out what the boy's interests are. |
| 7 | 10 | I like to help when .... there's a lot to be done. |
| 8 | 12 | I'm different from other girls in that .... I'm more serious. |
| 9 | 13 | My family .... is quite close-knit and happy. |
| 10 | 15 | When someone tells me to do something .... I usually do it if it is for a good reason. |
| 11 | 16 | When with strangers, I .... try to exchange interests involving school, church, and other activities. |
| 12 | 17 | Supervised study periods .... shouldn't be necessary to insure that work gets done. |
| 13 | 18 | I pray .... for my friends and family. |
| 14 | 20 | Ten years from now, I .... hope to have a home of my own. |
| 15 | 21 | Most people think that a nurse .... doesn't work as hard as she does, but they respect her for her services. |
| 16 | 22 | Other people think of me as .... an average person. |

| NSC | LHSC | Student D |
|---|---|---|
| 17 | 24 | I feel disgusted with myself when .... I do a poor job on something. |
| 18 | 25 | When asked to take charge, I .... have, and I try to do the job well. |
| 19 | 26 | The trouble with other people .... is that they don't understand so many things. |
| 20 | 28 | If I could change .... places with anyone else, I don't believe I would. |
| 21 | 31 | When I think of myself as a nurse, I .... think of the help I hope to do for others. |
| 22 | 33 | My mother thinks that I .... am doing all right. |
| 23 | 34 | I hope I never .... hurt my mother. |
| 24 | 35 | When they ask for volunteers .... I volunteer if I think I can handle the job. |
| 25 | 39 | I plan to marry when .... I graduate from nurses training. |
| 26 | 41 | If not admitted to nursing, I'll go into the teaching of home economics. |
| 27 | 45 | In making a decision, I .... usually worry about it for awhile and then decide. |
| 28 | 46 | Other girls my age .... are very similar to me. |
| 29 | 50 | When I need money .... I must save from my allowance. |
| 30 | 54 | I have most confidence in .... my father. |
| 31 | 55 | When criticized, I .... try to use the criticism to better myself. |
| 32 | 57 | My most disappointing experience in high school .... I can't think of one. |
| 33 | 64 | I worry .... about what others think of me. |

| NSC | LHSC | Student D |
|---|---|---|
| 34 | 68 | My greatest asset .... is my sense of humor. |
| 35 | 71 | Bathing soneone is .... something that is most essential in nursing. |
| 36 | 76 | The most important person .... in my life will be someone I can help. |
| 37 | 77 | In school, I .... always try to do well. |
| 38 | 84 | When afraid, I .... pray for faith. |
| 39 | 87 | In high school my assignments .... are not too difficulty to finish easily. |
| 40 | 90 | The first time away from home, I .... cried. |

## Student E

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will get along without me. |
| 2 | 2 | In high school, I was happiest when .... I received good grades. |
| 3 | 3 | At home, I .... help my parents with the chores. |
| 4 | 7 | Teachers .... are among my friends in and out of school. |
| 5 | 8 | I feel sad if .... someone I love dies. |
| 6 | 9 | When on a date, I .... have fun. |
| 7 | 10 | I like to help when .... I am needed. |
| 8 | 12 | I'm different from other girls in that .... I like to talk about horses. |
| 9 | 13 | My family .... is quite happy and secure. |
| 10 | 15 | When someone tells me to do something .... I enjoy doing it for them. |
| 11 | 16 | When with strangers, I .... try to talk with them. |
| 12 | 17 | Supervised study periods .... provide time to accomplish much. |
| 13 | 18 | I pray .... whenever and wherever I feel I need help or forgiveness. |
| 14 | 20 | Ten years from now, I .... hope to be married and have a family. |
| 15 | 21 | Most people think that a nurse .... is a very kind person. |
| 16 | 22 | Other people think of me as .... being able to make people laugh. |

| NSC | LHSC | Student E |
|---|---|---|
| 17 | 24 | I feel disgusted with myself when .... I get nervous making a speech. |
| 18 | 25 | When asked to take charge, I .... am frustrated at first but then I try to do the best I can. |
| 19 | 26 | The trouble with other people ... is that some don't have respect for others. |
| 20 | 28 | If I could change .... I'd be more understanding of other people. |
| 21 | 31 | When I think of myself as a nurse, I .... hope I'll be a good nurse. |
| 22 | 33 | My mother thinks that I .... should not take life so seriously. |
| 23 | 34 | I hope I never .... lose my respect for my country. |
| 24 | 35 | When they ask for volunteers .... I readily reply if it is at all possible. |
| 25 | 39 | I plan to marry when .... I'm ready for it. |
| 26 | 41 | If not admitted to nursing, I'll .... do something else, maybe I'd be a teacher. |
| 27 | 45 | In making a decision, I .... am not hasty. |
| 28 | 46 | Other girls my age .... are trying to find a career. |
| 29 | 50 | When I need money .... I work for it. |
| 30 | 54 | I have most confidence in .... my God. |
| 31 | 55 | When criticized, I .... try to take the criticism and learn by it. |
| 32 | 57 | My most disappointing experience in high school .... was when a false rumor was spread about me. |
| 33 | 64 | I worry .... about the sufferings of others. |
| 34 | 68 | My greatest asset .... is my skill in mathematics. |

| NSC | LHSC | Student E |
|---|---|---|
| 35 | 71 | Bathing someone is .... part of a nurse's job. |
| 36 | 76 | The most important person .... is my boyfriend. |
| 37 | 77 | In school, I .... had some problems. |
| 38 | 84 | When afraid, I .... ask God for help. |
| 39 | 87 | In high school my assignments .... were often challenging. |
| 40 | 90 | The first time away from home, I .... met many nice people. |

## Student F

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | |
| 1 | 1 | When I go to nursing school, my family .... will miss the help I can give them around the house. |
| 2 | 2 | In high school, I was happiest when .... my long hours of study turned into a high scholastic standing. |
| 3 | 3 | At home, I .... am expected to help. |
| 4 | 7 | Teachers .... are guides into the world of knowledge. |
| 5 | 8 | I feel sad if .... I hurt someone. |
| 6 | 9 | When on a date, I .... try to be myself. |
| 7 | 10 | I like to help when .... I feel I am capable and when my help is really needed. |
| 8 | 12 | I'm different from other girls in that .... (leaves blank) |
| 9 | 13 | My family .... is wonderful although it isn't perfect. |
| 10 | 15 | When someones tells me to do something .... I usually do it. |
| 11 | 16 | When with strangers, I .... am usually quiet. |
| 12 | 17 | Supervised study periods .... are unnecessary for high school graduates. |
| 13 | 18 | I pray .... very frequently. |
| 14 | 20 | Ten years from now, I .... hope to be married. |
| 15 | 21 | Most people think that a nurse .... is very dedicated to her work. |
| 16 | 22 | Other people think of me as .... trying hard even if I don't always succeed. |
| 17 | 24 | I feel disgusted with myself when .... I make an unnecessary foolish mistake. |

| NSC | LHSC | Student F |
|---|---|---|
| 18 | 25 | When asked to take charge, I .... try to do my best. |
| 19 | 26 | The trouble with other people .... is their unconcern about important matters. |
| 20 | 28 | If I could change .... the course of my life, I wouldn't. |
| 21 | 31 | When I think of myself as a nurse, I .... see myself helping the sick and giving them the strength to go on. |
| 22 | 33 | My mother thinks that I .... have made very fine plans for the future. |
| 23 | 34 | I hope I never .... make a mistake in nursing. |
| 24 | 35 | When they ask for volunteers .... I hesitate unless I know the task. |
| 25 | 39 | I plan to marry when .... I meet the right man and feel that I am prepared for the responsibility. |
| 26 | 41 | If not admitted to nursing, I'll .... die on the spot. |
| 27 | 45 | In making a decision, I .... like to talk it over with someone. |
| 28 | 46 | Other girls my age .... weigh less than I do. |
| 29 | 50 | When I need money .... I borrow. |
| 30 | 54 | I have most confidence in .... my mother. |
| 31 | 55 | When criticized, I .... try to take the advice as best I can. |
| 32 | 57 | My most disappointing experience in high school .... was a poor grade I got in math. |
| 33 | 64 | I worry .... about my grades. |
| 34 | 68 | My greatest asset .... is being able to talk to children. |
| 35 | 71 | Bathing someone is .... a new experience to me. |
| 36 | 76 | The most important person .... is one who is God-fearing, trustworthy, and honest. |

| NSC | LHSC | Student F |
|---|---|---|
| 37 | 77 | In school, I .... take part in as many activities as I can. |
| 38 | 84 | When afraid, I .... like to have someone near. |
| 39 | 87 | In high school my assignments .... were usually worthwhile. |
| 40 | 90 | The first time away from home .... had a lot of fun at camp. |

## B-20

## NES Scores

### Student A

| Stem numbers | | | | | |
|---|---|---|---|---|---|
| NSC | LHSC | Score | NSC | LHSC | Score |
| 1 | 1 | 2 | 21 | 31 | 2 |
| 2 | 2 | 1 | 22 | 33 | 2 |
| 3 | 3 | 1 | 23 | 34 | 2 |
| 4 | 7 | 2 | 24 | 35 | 1 |
| 5 | 8 | 1 | 25 | 39 | 1 |
| 6 | 9 | 2 | 26 | 41 | 2 |
| 7 | 10 | 2 | 27 | 45 | 2 |
| 8 | 12 | 2 | 28 | 46 | 2 |
| 9 | 13 | 3 | 29 | 50 | 2 |
| 10 | 15 | 3 | 30 | 54 | 2 |
| 11 | 16 | 2 | 31 | 55 | 2 |
| 12 | 17 | 3 | 32 | 57 | 1 |
| 13 | 18 | 2 | 33 | 64 | 2 |
| 14 | 20 | 2 | 34 | 68 | 1 |
| 15 | 21 | 2 | 35 | 71 | 1 |
| 16 | 22 | 2 | 36 | 76 | 2 |
| 17 | 24 | 2 | 37 | 77 | 2 |
| 18 | 25 | 2 | 38 | 84 | 2 |
| 19 | 26 | 3 | 39 | 87 | 1 |
| 20 | 28 | 1 | 40 | 90 | 2 |

**Total = 74**

## B-21

## NES Scores

## Student B

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | Score |
| 1 | 1 | 2 |
| 2 | 2 | 2 |
| 3 | 3 | 2 |
| 4 | 7 | 2 |
| 5 | 8 | 2 |
| 6 | 9 | 2 |
| 7 | 10 | 1 |
| 8 | 12 | 2 |
| 9 | 13 | 2 |
| 10 | 15 | 1 |
| 11 | 16 | 3 |
| 12 | 17 | 3 |
| 13 | 18 | 1 |
| 14 | 20 | 1 |
| 15 | 21 | 2 |
| 16 | 22 | 2 |
| 17 | 24 | 1 |
| 18 | 25 | 1 |
| 19 | 26 | 2 |
| 20 | 28 | 2 |
| 21 | 31 | 2 |
| 22 | 33 | 2 |
| 23 | 34 | 2 |
| 24 | 35 | 2 |
| 25 | 39 | 2 |
| 26 | 41 | 2 |
| 27 | 45 | 2 |
| 28 | 46 | 2 |
| 29 | 50 | 1 |
| 30 | 54 | 2 |
| 31 | 55 | 1 |
| 32 | 57 | 1 |
| 33 | 64 | 2 |
| 34 | 68 | 2 |
| 35 | 71 | 2 |
| 36 | 76 | 2 |
| 37 | 77 | 2 |
| 38 | 84 | 2 |
| 39 | 87 | 2 |
| 40 | 90 | 2 |

Total = 73

## B-22

## NES Scores

## Student C

| Stem numbers | | | | | |
|---|---|---|---|---|---|
| NSC | LHSC | Score | NSC | LHSC | Score |
| 1 | 1 | 2 | 21 | 31 | 2 |
| 2 | 2 | 2 | 22 | 33 | 3 |
| 3 | 3 | 1 | 23 | 34 | 2 |
| 4 | 7 | 2 | 24 | 35 | 2 |
| 5 | 8 | 2 | 25 | 39 | 1 |
| 6 | 9 | 3 | 26 | 41 | 2 |
| 7 | 10 | 2 | 27 | 45 | 2 |
| 8 | 12 | 2 | 28 | 46 | 2 |
| 9 | 13 | 2 | 29 | 50 | 2 |
| 10 | 15 | 3 | 30 | 54 | 1 |
| 11 | 16 | 2 | 31 | 55 | 2 |
| 12 | 17 | 3 | 32 | 57 | 2 |
| 13 | 18 | 2 | 33 | 64 | 2 |
| 14 | 20 | 2 | 34 | 68 | 2 |
| 15 | 21 | 2 | 35 | 71 | 1 |
| 16 | 22 | 2 | 36 | 76 | 2 |
| 17 | 24 | 2 | 37 | 77 | 2 |
| 18 | 25 | 2 | 38 | 84 | 2 |
| 19 | 26 | 2 | 39 | 87 | 1 |
| 20 | 28 | 2 | 40 | 90 | 2 |

Total = 79

## NES Scores

## Student D

| Stem numbers | | |
|---|---|---|
| NSC | LHSC | Score |
| 1 | 1 | 2 |
| 2 | 2 | 2 |
| 3 | 3 | 2 |
| 4 | 7 | 3 |
| 5 | 8 | 2 |
| 6 | 9 | 1 |
| 7 | 10 | 2 |
| 8 | 12 | 1 |
| 9 | 13 | 2 |
| 10 | 15 | 1 |
| 11 | 16 | 2 |
| 12 | 17 | 1 |
| 13 | 18 | 1 |
| 14 | 20 | 2 |
| 15 | 21 | 1 |
| 16 | 22 | 2 |
| 17 | 24 | 2 |
| 18 | 25 | 2 |
| 19 | 26 | 2 |
| 20 | 28 | 2 |
| 21 | 31 | 1 |
| 22 | 33 | 2 |
| 23 | 34 | 1 |
| 24 | 35 | 2 |
| 25 | 39 | 1 |
| 26 | 41 | 2 |
| 27 | 45 | 2 |
| 28 | 46 | 2 |
| 29 | 50 | 2 |
| 30 | 54 | 1 |
| 31 | 55 | 2 |
| 32 | 57 | 2 |
| 33 | 64 | 2 |
| 34 | 68 | 2 |
| 35 | 71 | 1 |
| 36 | 76 | 2 |
| 37 | 77 | 2 |
| 38 | 84 | 2 |
| 39 | 87 | 2 |
| 40 | 90 | 2 |

Total = 70

## NES Scores

### Student E

| Stem numbers | | | | | |
|---|---|---|---|---|---|
| NSC | LHSC | Score | NSC | LHSC | Score |
| 1 | 1 | 3 | 21 | 31 | 2 |
| 2 | 2 | 2 | 22 | 33 | 2 |
| 3 | 3 | 2 | 23 | 34 | 2 |
| 4 | 7 | 2 | 24 | 35 | 2 |
| 5 | 8 | 2 | 25 | 39 | 2 |
| 6 | 9 | 2 | 26 | 41 | 2 |
| 7 | 10 | 2 | 27 | 45 | 2 |
| 8 | 12 | 2 | 28 | 46 | 2 |
| 9 | 13 | 2 | 29 | 50 | 2 |
| 10 | 15 | 2 | 30 | 54 | 2 |
| 11 | 16 | 2 | 31 | 55 | 2 |
| 12 | 17 | 3 | 32 | 57 | 2 |
| 13 | 18 | 2 | 33 | 64 | 2 |
| 14 | 20 | 2 | 34 | 68 | 2 |
| 15 | 21 | 2 | 35 | 71 | 1 |
| 16 | 22 | 1 | 36 | 76 | 3 |
| 17 | 24 | 2 | 37 | 77 | 3 |
| 18 | 25 | 2 | 38 | 84 | 2 |
| 19 | 26 | 2 | 39 | 87 | 2 |
| 20 | 28 | 2 | 40 | 90 | 2 |

Total = 82

## B-25

## NES Scores

## Student F

Stem numbers

| NSC | LHSC | Score | NSC | LHSC | Score |
|---|---|---|---|---|---|
| 1 | 1 | 3 | 21 | 31 | 1 |
| 2 | 2 | 2 | 22 | 33 | 2 |
| 3 | 3 | 2 | 23 | 34 | 2 |
| 4 | 7 | 2 | 24 | 35 | 2 |
| 5 | 8 | 1 | 25 | 39 | 2 |
| 6 | 9 | 2 | 26 | 41 | 1 |
| 7 | 10 | 1 | 27 | 45 | 1 |
| 8 | 12 | 2 | 28 | 46 | 3 |
| 9 | 13 | 2 | 29 | 50 | 2 |
| 10 | 15 | 3 | 30 | 54 | 1 |
| 11 | 16 | 3 | 31 | 55 | 2 |
| 12 | 17 | 1 | 32 | 57 | 3 |
| 13 | 18 | 2 | 33 | 64 | 1 |
| 14 | 20 | 2 | 34 | 68 | 2 |
| 15 | 21 | 2 | 35 | 71 | 2 |
| 16 | 22 | 1 | 36 | 76 | 2 |
| 17 | 24 | 2 | 37 | 77 | 2 |
| 18 | 25 | 2 | 38 | 84 | 3 |
| 19 | 26 | 2 | 39 | 87 | 2 |
| 20 | 28 | 2 | 40 | 90 | 1 |

Total = 76

## Appendix C

## NORMATIVE STANDARDS FOR NES-LHSC-TOTAL AND NES-LHSC-AREA SCORES BASED ON 445 RECORDS

| Percentiles | Nursing | Self | Home-Family | Responsibility | Others-Love-Marriage | Academic | NES Total Scores |
|---|---|---|---|---|---|---|---|
| 99 | 12 | 26 | 11 | 17 | 15 | 13 | 84 |
| 95 | 11 | 24 | 9 | 16 | 14 | 12 | 80 |
| 90 | 10 |  |  | 15 | 13 | 11 | 79 |
| 85 |  |  |  |  |  |  | 78 |
| 80 |  |  | 8 |  |  |  |  |
| 75 |  | 23 |  |  | 12 |  |  |
| 70 |  |  |  | 14 |  |  | 77 |
| 65 | 9 |  |  |  |  |  | 76 |
| 60 |  |  |  |  |  | 10 |  |
| 55 |  |  |  |  |  |  | 75 |
| 50 |  | 22 |  |  |  |  |  |
| 45 |  |  |  |  |  |  | 74 |
| 40 |  |  | 7 |  | 11 |  |  |
| 35 |  |  |  | 13 |  |  | 73 |
| 30 | 8 |  |  |  |  | 9 |  |
| 25 |  | 21 |  |  |  |  | 72 |
| 20 |  |  |  |  |  |  | 71 |
| 15 |  |  |  |  | 10 |  |  |
| 10 | 7 | 20 |  | 12 |  | 8 | 70 |
| 5 |  | 18 | 6 | 11 |  |  | 68 |
| 1 | 6 | 17 |  | 10 | 9 | 7 | 66 |

## NORMATIVE STANDARDS FOR NES-NSC TOTAL AND NES-NSC AREA SCORES BASED ON 686 RECORDS

| Percentiles | Nursing | Self | Home-Family | Responsibility | Others-Love-Marriage | Academic | NES Total Scores |
|---|---|---|---|---|---|---|---|
| 99 | 12 | 26 | 11 | 17 | 15 | 14 | 85 |
| 95 | 10 | 25 | 9 | 16 | 13 | 12 | 82 |
| 90 | | | | | | | 81 |
| 85 | | 24 | | 15 | | | 79 |
| 80 | | | 8 | | | 11 | 78 |
| 75 | | | | | 12 | | |
| 70 | | | | | | | |
| 65 | 9 | | | 14 | | | 77 |
| 60 | | 23 | | | | | |
| 55 | | | | | | | 76 |
| 50 | | | | | | 10 | |
| 45 | | | | | 11 | | 75 |
| 40 | | | | 13 | | | |
| 35 | | | 7 | | | | 74 |
| 30 | | 22 | | | | | |
| 25 | 8 | | | | | 9 | 73 |
| 20 | | | | | | | |
| 15 | | | | 12 | 10 | | 72 |
| 10 | 7 | 21 | | | | 8 | 71 |
| 5 | | 20 | 6 | 11 | 9 | | 70 |
| 1 | 6 | 19 | | 10 | 8 | 7 | 68 |

## NORMATIVE STANDARDS FOR NES-NAI TOTAL AND NES-NAI-AREA SCORES BASED ON 463 RECORDS

| Percentiles | Nursing | Self | Home-Family | Responsibility | Others-Love-Marriage | Academic | NES Total Scores |
|---|---|---|---|---|---|---|---|
| 99 | 12 | 27 | 11 | 17 | 16 | 13 | 84 |
| 95 | 11 | 24 | 10 | 16 | 14 | 12 | 80 |
| 90 |  | 23 |  |  | 13 |  | 79 |
| 85 | 10 |  | 9 | 15 |  | 11 | 78 |
| 80 |  | 22 |  |  |  |  |  |
| 75 |  |  |  |  |  |  | 77 |
| 70 |  |  |  |  |  |  |  |
| 65 |  |  |  |  |  | 10 | 76 |
| 60 |  | 21 | 8 | 14 | 12 |  | 75 |
| 55 | 9 |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |
| 45 |  |  |  |  |  |  | 74 |
| 40 |  |  |  |  |  |  |  |
| 35 |  | 20 |  | 13 |  |  | 73 |
| 30 |  |  | 7 |  |  |  |  |
| 25 | 8 |  |  |  |  | 9 | 72 |
| 20 |  | 19 |  |  | 11 |  |  |
| 15 |  |  |  | 12 |  |  | 71 |
| 10 |  | 18 |  |  |  |  | 70 |
| 5 | 7 |  | 6 | 11 | 10 | 8 | 69 |
| 1 | 6 | 17 |  | 10 |  | 8 | 66 |